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I.

STATISTICS IN COLLEGES.

By CARROLL D. WRIGHT.

II.

SOCIOLOGY AND POLITICAL ECONOMY.

By FRANKLIN H. GIDDINGS.

III.

THE LEGAL-TENDER DECISIONS.

By EDMUND J. JAMES, PH. D.

AMERICAN ECONOMIC ASSOCIATION.
MARCH, 1888.

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The Study of Statistics in Colleges.

BY HON. CARROLL D. WRIGHT,
United States Commissioner of Bureau of Labor.

Paper read at the joint session of the American Economic and Historical Associations, at Cambridge, Mass., May 24, 1887.

America has no counterpart to the continental school of statisticians, whose members have entered their particular field of science after special training by a systematic course of instruction. We have our statisticians, to be sure, but they have taken up their work accidentally, and not as a profession. Men engaged in the practice of law or of medicine, or in the other learned professions, enter them only after careful preparation. Our government trains its soldiers and sailors : our colleges and higher institutions of learning fit men for various special scientific and professional labors, but we have not yet reached the advanced stage of educational work in this country which comprehends administration in its broadest terms. The European has an advantage over those engaged in statistical work in this country. Many of the leading colleges and universities of the continent make special effort to fit men to adopt statistical science as a branch of administration, or as a profession.

Körösi, Neumann-Spallart, Ernst Engel, Block, Böhmer, Mayr, Levasseur, Bodio, and their score or more of peers, may well excite our envy, but more deeply stimulate the regret that one of their number,

from his brilliant training and his scientific attainments, cannot present to you to-day the necessity of copying into the curricula of our American colleges the statistical features of the foreign school. For magnificent achievement the American statistician need not blush in the presence of the trained European, for, without conceit, we can place the name of our own Walker along with the names of those eminent men I have enumerated. With all the training of the schools, the European statistician lacks the grand opportunities which are open to the American. Rarely has the former been able to project and carry out a census involving points beyond the simple enumeration of the people, embracing a few inquiries relating to social conditions : such inquiries seldom extending beyond those necessary to learn the ages, places of birth, and occupations of the population. Such a census, compared with the ninth and tenth Federal enumerations of the United States, appears but child's play.

Dr. Engel once said to me that he would gladly exchange the training of the Prussian Bureau of Statistics for the opportunity to accomplish what could be done in our country. For with it all, he could not carry out what might be done with comparative ease under our government. The European statistician is constantly cramped by his government; the American government is constantly forced by the people. The Parliament of Great Britain will not consent to an industrial census, the proposition that the features of United States census-taking be incorporated in the British census being defeated as regularly as offered. Nor does any continental power yet dare to make extensive inquiries into the condition of the people, or

relative to the progress of their industries. The continental school of statisticians, therefore, is obliged to urge its government to accomplish results familiar to our people. The statistics of births, deaths, and marriages, and other purely conventional statistics, are substantially all that come to the hands of the official statisticians abroad. In this country, the popular demand for statistical information is usually far in advance of the governments, either State or Federal, and so our American statisticians have been blessed with opportunities which have given them an experience, wider in its scope, and of a far more reaching character than has attended the efforts of the continental school. Notwithstanding these opportunities which surround official statistics in this country, the need of special scientific training for men in the administration of statistical work is great indeed. This necessity I hope to show before I close.

It is not essential, in addressing an audience of this character, to spend a moment even upon definitions. The importance of statistics must be granted : the uses of the science admitted. But it may be well, before urging specifically the needs of this country for statistical training, to give a few facts relative to such work in European schools.¹

The best school for statistical science in Europe is connected with the Prussian statistical bureau, and was established a quarter of a century ago by Dr. Ernst Engel, the late head of the bureau, probably

¹President Walker, of the Institute of Technology; Dr. Ely, of Johns Hopkins; Prof. R. M. Smith, of Columbia College; Dr. Dewey, of the Institute of Technology; and Dr. E. R. L. Gould, of Washington, have very kindly placed at my disposal information supplemental to that which was at hand.

the ablest living statistician in the old world. The seminary of this statistical bureau is a training school for university graduates of the highest ability, in the art of administration, and in the conduct of statistical and other economic inquiries that are of interest and importance to the government. The practical work is done in connection with the government offices, among which advanced students are distributed with specific tasks. Systematic instruction is given by lectures, and by the seminary or laboratory method, under a general director. Government officers and university professors are engaged to give regular courses to these advanced students. It is considered one of the greatest student honors in Berlin for a university graduate to be admitted to the Statistical Seminary. One graduate of the Johns Hopkins University, a doctor of philosophy, is already under a course of instruction in the Prussian laboratory of political science.

The work of taking the Census of the Prussian population and resources is entrusted to educated men, many of them trained to scientific accuracy by long discipline in the Statistical Seminary, and by practical experience. (*Circulars of Information, U. S. Bureau of Education. No. 1, 1887*, by Prof. H. B. Adams.)

In this seminary there are practical exercises under the statistical bureau during the day time, with occasional excursions to public institutions, in addition to lectures held mostly in the evening. A recent programme of the seminary comprehends :

1. Theory, technique, and encyclopædia : once a week.
2. Statistics of population and of dwellings : once a week.
3. Medical statistics : once a week.

4. Applied mathematical statistics: once a week.
5. Agrarian statistics: once a week.
6. Exercises in political economy, finance, and financial statistics: 2 hours a week.

The students assist in the work of the statistical bureau without compensation. This is a part of their training, and by it theory and practice are most successfully combined.

I believe there are courses in statistics in nearly all the universities in Germany, certainly in the more prominent institutions of that country, but there are no distinct chairs of statistics. Statistical science is considered a part of political economy, and professors of the latter science give the instruction in statistics.

The most prominent announcements for the leading European universities, for the year 1886-7, are as follows :

University of Leipzig: Professor W. Roscher lectures on agricultural statistics, this branch being a part of one course, taking one or two hours a week. One hour a week is also given to political economy and statistical exercises by Dr. K. Walker.

University of Tübingen: Prof. Gustav von Rümelin devotes three hours a week to social statistics, while Professor Lorey includes in his lectures a treatment of the statistics of forests.

University of Würzburg: Professor G. Schanz devotes four hours a week to general statistics.

University of Dorpat (a German institution in Russia): Professor Al. v. Oettingen teaches ethical statistics two hours each week.

University of Breslau: Professor W. Lexis uses one hour a week on the statistics of population.

University of Halle: Professor Conrad has a seminary of five hours a week, in which statistical subjects, among others, are carefully treated.

University of Kiel: Professor W. Seelig devotes four hours a week to general statistics, and statistics of Germany.

University of Königsberg: Professor L. Elster lectures two hours a week on the theory of statistics.

University of Munich : Dr. Neuberg has a course of one to two hours a week on statistics.

University of Strasburg : Professor G. F. Knapp teaches the theory and practice of statistics three hours a week, and with Professor Brentano has a seminary two hours a week, in which, among other matters, they treat statistical subjects.

University of Prague : Professor Surnegg-Marburg teaches the statistics of European States three hours each week.

University of Vienna : Professor von Inama-Sternegg devotes two hours each week in a statistical seminary.

In addition to the university work outlined, much work is done in the technical schools, as, for instance, at the technical school in Vienna there are given regularly two courses of statistics :

First, "General comparative statistics of European States;" their surface, population, industries, commerce, education, etc.

Second, "Industrial statistics of European States;" methods and "technik" of industrial statistics.

* These courses are given by Dr. von Brachelli, who is officially connected with the Government Bureau of Statistics.

At Dresden, Dr. Böhmert lectures at the Polytechnic on "The elements of statistics," and has a statistical seminary. Böhmert is the director of the statistical bureau in the department of the interior. Part of the instruction is given at the bureau. Courses are also given at Zurich on the elements of statistics.

Some of the more important announcements connected with the Ecole Libre des Sciences Politiques, of Paris, for the year 1886-7, are as follows :

1. By Professor Levasseur, the theory of statistics, and the movement of population, one hour a week for the first quarter.
2. By M. de Foville, Chief of the Bureau of Statistics, one hour a week in the second quarter upon statistics, commerce, and statistics of foreign commerce.
3. By Professor Pigeonneau, one exercise each week, in which he treats, among other subjects, of commercial statistics.

In the programme of the University of Brussels, for 1878 and 1879, an announcement for a course of political economy and statistics twice each week, by Professor A. Orts, was made.

Something is being done in Italy, but how much I am not at present able to learn.

These courses, it will be seen, are devised for special training in the practical statistics of the countries named.

A great deal of effort has been expended in Europe through statistical congresses since 1853 to secure uniform inquiries in census-taking, and it is to be regretted that the Congresses have not accomplished the results sought. It was unfortunate that the attention of the statisticians of the world, as brought together in the congresses, was given to the form of inquiry to the exclusion of the form of presentation. In tracing the discussions and deliberations of these congresses, the absence of the intelligent treatment of the presentation of facts, even when drawn out by uniform inquiries, becomes apparent. The art of the statistician in his administrative work found but little encouragement in the long discussions on forms of inquiry, and less was accomplished by these congresses, which are not now held, than has been accomplished through training in the universities of Europe. The great statistical societies abroad have done much in stimulating statistical science, and out of these societies there has now been organized the International Statistical Institute, the first session of which was held in Rome during last month: much is to be hoped from the labors of this Institute, for the men who compose it bring both training and experience to the great task of unifying statistical inquiries.

and presentations, so far as leading generic facts are concerned, for the great countries comprehended under the broad term, "the civilized world." For this great array of work, the outlines of which I have briefly and imperfectly given as carried on in Europe. America has no parallel.

Our colleges are beginning to feel that they have some duty to perform, in the work of fitting men for the field of administration, and specifically in statistical science. Dr. Ely is doing something at Johns Hopkins, giving some time, in one of his courses on political economy, to the subject of statistics, explaining its theory, tracing the history of the art or science, and describing the literature of the subject. He attempts, in brief, to point out the vast importance of statistics to the student of social science and to put his student in such a position that he can practically continue his study. Johns Hopkins, as soon as circumstances will admit, will probably secure teachers of statistics and administration, in addition to its present corps of instructors.

Dr. Davis R. Dewey, of the Massachusetts Institute of Technology, is also devoting some time, in connection with his other work, to statistical science. He has two courses :

First. A course of statistics and graphic methods of illustrating statistics, in which attention is chiefly given to the uses of official statistics of the United States. Students are directed to the limitations there are in this respect, what compilations have been and are made, and to the possible reconciliation of discrepancies which appear in official reports. This course is taken in connection with a course in United States finance, and the student is trained to

find and use the statistics which will illustrate the points taken up, and to present them graphically.

Second, An advanced course is given in statistics of sociology, in which social, moral, and physiological statistics are considered, in short, all those facts of life which admit of mathematical determination to express the "average man." Some of Dr. Dewey's actual problems may serve to illustrate the practical work of his course. Samples of the problems which he gives to his students are as follows :

Are the Indians increasing or decreasing in numbers?

Criticise by illustrations the statement that the value of the products of manufacture of the United States in 1880 was \$5,369,325,442.

What margin of error would you allow, if called upon to test the accuracy of the returns of population under one year of age in the Federal census returns?

Can you devise a method to determine from the census reports on population, Table XXI., which is the healthier state, Massachusetts or Connecticut?

Is it true that Massachusetts has more crime per capita than Alabama or Georgia? Can you offer any explanation or facts modifying such a statistical conclusion? Do the census reports afford information as to the increase or decrease in crime?

Perhaps the most systematic teaching of the science of statistics in America is given at Columbia College, under the direction of Professor Richmond M. Smith. He has lectured on the subject of statistical science in the Columbia College School of Political Science since the year 1882. His course is an advanced one for the students of the second or third year of that school. In the first year of the work there were but three students of statistical science; at present there are about twenty-five. Professor Smith gives them lectures two hours per week through the greater part of the year. The theoretical lectures cover a brief history of statistics; a consideration of statistical

methods : of the connection of statistical science with political and social science : of the attempt to establish social laws from statistical induction : the doctrine of probabilities, etc., this part of the course being based on German and French writers, principally Mayr, Engel, Wagner, Knapp, Oettingen, Quetelet, Block, and others. The practical part of the Columbia course covers the ordinary topics of statistical investigation, and the statistics are taken, as far as possible, from official publications. These latter lectures are of course comments on the tables and diagrams themselves. Wall tables are used to a certain extent, but experience has found it more convenient to lithograph the tables and diagrams, giving a copy to each student, which he can place in his notebook, and thus save the labor of copying.

From a circular of information from the Columbia College School of Political Science I find the following, relating to the teaching of statistical science :

"Statistical science : methods and results. This course is intended to furnish a basis for a social science by supplementing the historical, legal, and economic knowledge already gained, by such a knowledge of social phenomena as can be gained only by statistical observation. Under the head of statistics of population are considered : race and ethnological distinctions, nationality, density, city and country, sex, age, occupation, religion, education, births, deaths, marriages, mortality tables, emigration, etc. Under economic statistics : land, production of food, raw material, labor, wages, capital, means of transportation, shipping, prices, etc. Under the head of moral statistics are considered : statistics of suicide, vice, crime of all kinds, causes of crime, condition of criminals, repression of crime, penalties and effect of penalties, etc. Finally is considered the method of statistical observations, the value of the results obtained, the doctrine of free will, and the possibility of discovering social laws."

There may be other instances of the teaching of statistical science in American colleges, but those given are all that have come to my knowledge. At

Harvard, Dr. Bushnell Hart is teaching the art of graphically presenting statistics, while at Yale and other institutions the theory and importance of statistics are incidentally impressed upon the students in political economy. It will be seen, therefore, that if there is any necessity for such a course as has been cited, the necessity is being met only in slight degree.

Is there such a necessity? Speaking from experience I answer emphatically, Yes. There has not been a single day in the fourteen years that I have devoted to practical statistics that I have not felt the need, not only in myself, but in the offices where my work has been carried on, of statistical training; training not only in the sense of school training, but in the sense of that training which has come to our American statisticians only through experience. My great regret on this occasion is that I can address you with the statistical bureau only as my *alma mater*, but perhaps the lack I have seen and felt of a different *alma mater* may give force to my suggestions.

The problems which the statistician must solve, if they are solved at all, are pressing upon the world. Many chapters of political economy must be rewritten, for the study of political economy is now brought under the historical and comparative method, and statistical science constitutes the greatest auxiliary of such a method. There is so much that is false that creeps into the popular mind, which can be rectified only through the most trustworthy statistical knowledge, that the removal of apprehension alone by it creates a necessity sufficient to command the attention of college authorities. The great questions of the day, the labor question, temperance, tariff reform, all great topics, demand the auxiliary aid of

scientific statistics, and a thorough training is essential for their proper use. But in the first place there should be a clear understanding of what is necessary to be taught. We read many chapters on the theory and practice of statistics. What is the theory of statistics? The use of the word *theory*, in connection with statistical science, is to my mind unfortunate, for the word theory, when used in connection with positive information, antagonizes the public mind. When you speak of the theory of statistics, the word theory meaning speculation, the popular feeling is that theoretical statistics are not wanted, but facts. Theory may be fact; statistics may substantiate theory or controvert it. All this we know, and yet I feel that the word is used unfortunately in this connection. If I understand it correctly, the theory of statistics is simply a statement of what it is desired to accomplish by statistics.

Every branch of social science serves to explain the facts of human life. There are some facts which can be explained only by statistics. For instance, it is asserted that there is an alarming amount of illiteracy in Massachusetts. Statistical inquiry shows that by far the greater number of these illiterates are of foreign birth, so that the fault is not with the public school system, but the evil is due to a temporary cause, namely, immigration.

Again, it has been freely asserted that in the United States women of native birth do not have as many children as women of foreign birth. The Census of Massachusetts will show that although American women do have a less number of children, on the average, yet a larger number survive. Common observation would never have shown these things, or would not have shown them accurately.

So everywhere statistics attempt to explain the facts of human life, which can be explained in no other way, as for instance, the effect of scarcity of food on births, on marriages, or crime : the effect of marriage laws on the frequency of divorce, etc. The theory of statistics points out where the statistical method is applicable, and what it can and cannot accomplish. In my opinion, however, it would be better to avoid the use of the word theory entirely, and adopt a concrete term like statistical science, which has three branches : collection, presentation, and analysis. Statistics is a science in its nature, and practical in its working.

The science of statistics, practically considered, comprehends the gathering of original data in the most complete and accurate manner : the tabulation of the information gathered by the most approved methods, and the presentation of the results in compact and easily understood tables, with the necessary text explanations. It is the application of statistics which gives them their chief popular value, and this application may, therefore, legitimately be called a part of the science of statistics. The theoretical statistician is satisfied if his truth is the result of statistical investigation, or if his theory is sustained. The practical statistician is satisfied only when the absolute truth is shown, or, if this is impossible, when the nearest approximation to it is reached. But the belief that theory must be sustained by the statistics collected, or else the statistics be condemned, is an idea which gets into the popular mind when the expression, theory of statistics, is used. I would, therefore, avoid it, and I hope that should our colleges adopt courses in statistical science, they will agree

upon a noméclature which shall be expressive, easily understood, and comprehensive in its nature.

The necessity of the study of statistical science would not be so thoroughly apparent if the science was confined to the simple enumeration and presentation of things, or primitive facts, like the number of the people: to tables showing crops, exports, imports, immigration, quantities, values, valuation, and such elementary statements, involving only the skill of the arithmetician to present and deal with them. The moment the combinations essential for comparison are made, there is needed something beyond the arithmetician, for with the production of averages, percentages, and ratios, for securing correct results, there must come in play mathematical genius, and a genius in the exercise of which there should be discernible no influence from preconceived ideas. The science of statistics has been handled too often without statistical science, and without the skill of the mathematician. Many illustrations of this point involving the statistics of this country could be given.

In collating statistics relating to the cost of production, the best mathematical skill is essential, even the skill which would employ algebraic formulæ. So with relation to statistics of capital invested in production. To illustrate, the question may be asked, what elements of capital are involved in the census question of "capital invested?" Is it simply the cash capital invested by the concern under consideration, or is it all the money which is used to produce a given quantity of goods? If the members of a firm contribute the sum of \$10,000, and they have a line of discounts of \$100,000, the avails of which are used in producing \$200,000 worth of completed goods, what

is the capital invested? What is the capital invested which should be returned in the census? If a man has \$5,000 invested in his business as a manufacturer, and he buys his goods on 90 days, or four months, and sells for cash, or 30 days, what is his capital invested? This question is one among many of the practical problems that arise in a statistical bureau, but which has not yet been treated scientifically. What has been the result of the reported statistics relating to capital invested? Simply that calculations, deductions, and arguments based on such statistics have been, and are, vicious, and will be until all the elements involved in the term are scientifically classified. Another illustration in point arises in connection with the presentation of divorce statistics, especially when it is desired to compare such statistics with marriages, or to make comparisons to show the progress, or the movement of divorces. Shall the number of divorcees be compared with the number of marriages celebrated in the year in which the divorces are granted, or with the population, or with the number of married couples living at the time? I need not multiply illustrations. The lies of statistics are unscientific lies.

The conditions of this country necessitate knowledge as to the parent nativity of the population, features not included in any foreign census, and need not be. Such features lead to what may be called correlated statistics: for instance, where there are presented three or more facts relating to each person in the population, the facts being coördinate in their nature. In this class of work skill beyond that which belongs to the simple operations in arithmetic becomes necessary. There must be employed

some knowledge of statistical science beyond elementary statistical tables, or the correlations will be faulty, all the conclusions drawn from them false, and harm done to the public. While the scientific statistician does not care to reach conclusions from insufficient data, he much less desires to be misled by the unscientific use of correct data, or from data the presentation of which has been burdened with disturbing causes. The analytical work of statistical science demands the mathematical man. While this is true, it is also true that the man who casts a schedule (for instance, to comprehend the various economic facts associated with production), should have the ability to analyze the tabulated results of the answers to the inquiries borne upon the schedule. In other words, the man who casts the schedule should not only be able to foresee the work of the enumerator, or the gatherer of the answers desired, but he should foresee the actual form in which the completed facts should be presented. Furthermore, he should foresee the analysis which such facts stimulate and not only foresee the detail, but foresee in a comprehensive way the whole superstructure which grows from the foundation laid in the schedule. He should comprehend his completed report before he gathers the needed information.

How can these elements in one's statistical education be secured? The difficulties in the way of the best statistical work are not slight. Dr. Dewey, in a recent address upon average prices, before the American Statistical Association, gave an exceedingly valuable, and a very clear explanation of the difficulties which underlie all efforts to secure average prices ranging over a period of years; he pointed out the

different methods of securing such averages, and I can do no better than to use Dr. Dewey's own words, as taken from the address referred to. He says :

"There is first the ordinary 'index method' introduced by Mr. Newmarch, and continued by the Economist and Mr. Jevons. In this there is no attempt to take account of the varying importance of the commodities where prices are averaged together, but equal consideration is given to all."

"A second method is to give each commodity, where price enters into the averages, a weight proportionate to the quantity of it *sold* during a fixed period of time.

"In the third method account is taken of the varying importance of the commodities by regarding the part each plays in the *exports and imports* of a country. This system has been used by Messrs. Giffen and Mulhall. Mr. Giffen's process in detail is to find the average value of the different articles in the exports and imports : combine these in the proportions of the different articles to the totals of the exports and imports, and then reduce the totals for a series of years to the values they would have been equivalent to had prices remained unchanged."

This simply indicates that no statistician has yet arrived at a method for securing average prices that shall be considered absolutely correct : that is, in other words, the science of average prices has not been reached, because, if it had been, there would be but one method of securing them. There is but one multiplication table : all men agree to it, because every part of it has been demonstrated to be true. The principle of the multiplication table in statistical operations indicates that science triumphs, for no scientific conclusion is reached so long as skilled men, men of experience and of training, differ relative to methods or results.

The teaching of statistical science in our colleges involves three grand divisions :

1. The basis of statistical science, or, as it has been generally termed in college work, the theory of statistics.

2. The practice of statistics, which involves the preparation of inquiries, the collection and examination of the information sought, and the tabulation and presentation of results.

3. The analytical treatment of the results secured.

These three general elements become more important as the science of statistics becomes more developed; that is, while in conventional statistics, or official statistics if you prefer, meaning those which result from continuous entry of the facts connected with routine transactions, like custom house operations, the registration of births, deaths, and marriages, etc., these three elements may not be apparent. But when considered as regards the collection of information from original sources by special investigation through the census, through our bureaus of statistics of labor and kindred offices, and through the consular service, these three grand elements assume a vast importance, and statistical science demands that men be employed who comprehend thoroughly and clearly all the features of the three elements of the science, for the variety of facts to be collected suggests the variety of features connected with the work.

Last year I had the honor to address the American Social Science Association upon popular instruction in social science, advocating the teaching in the public schools of the elementary principles of social science, comprehending those things which are most essential in the conduct of life, in the preservation of health, and in the securing of good order. The Association discussed the practicability of teaching social science in our higher institutions of learning. The suggestion that the school and the college be utilized for propagating the science was met with but one

objection of any moment. This objection was that in the colleges and schools the whole time is now exhausted in teaching the branches of human knowledge already established as a part of the curricula of such schools; an excellent objection from a narrow point of view, but a thoroughly inadmissible objection from a point of view which takes in the development of the human race on the best basis, and on a high standard. It was met by the counter-statement that if there is no time in the ordinary college to teach all that the college now teaches, and devote a few hours per week to social science, and all that social science means, so far as teaching is concerned, then drop something else and introduce the social science. But nothing need be dropped in order to teach social science in the colleges and schools of the country. Now, the only objection which I anticipate to the teaching of statistics in our colleges is the same that was made to the proposition to teach social science generally in such institutions, that there is no room for the introduction of instruction in the new science. To my own mind this objection is not only trivial, but of no account whatever in the practical working of institutions of learning. Every well appointed college has its chair of political economy, and this department can be broadened sufficiently to take in statistical science, without impairing efficiency in this or any other department. If this cannot be done, then I would say to the colleges of America that the institutions which soonest grasp the progressive educational work of the day will be the most successful competitors in the race. That college which comprehends that it is essential to fit men for the best administrative duties, not only in government, but

in the great business enterprises which demand leaders of as high quality as those essential for a chief magistrate, will receive the patronage, the commendation, and the gratitude of the public. The college or the university which comprehends the demand of the day and institutes new forms of degrees to be conferred upon the men and women specially qualified in special science is in the van. Why should there not be a degree for sanitary science? Why should there not be a degree for social science? Doctor of Philosophy is not enough: it means nothing in popular estimation. The Doctor of Philosophy must understand various things; must be taught and thoroughly trained in the branches necessary to secure the degree of Doctor of Philosophy, but he may know nothing of other branches of human knowledge, except in the most incidental way, which are so essential to fit him for the best administrative duties. The organization of industry demands the very highest type of mind. I sometimes think that the great industrial chieftains of the world are far superior in their capacity, and in their general comprehensive ability, to the great statesmen, to the great leaders of polities, and the great lights that carry nations through crises even. The men who are the best trained, who have learned the practical work of special sciences, are the ones that are guiding the people, and so the colleges or the universities which grasp these things, introducing the teaching of statistical science along with all the other great features of social science, including the branches which bring knowledge nearest to the community itself, are the colleges which will secure success: and not only success in a pecuniary point of view, but success in that grander field of the best

work for the race. I urge, therefore, that our American colleges follow the example of European institutions. I would urge upon the government of the United States, and upon the government of the States, the necessity of providing by law for the admission of students that have taken scientific courses in statistics as honorary attachés of, or clerks to be employed in the practical work of, statistical offices. This is easily done without expenditure by the government, but with the very best economic results.

We take a census in the United States every ten years, but as a rule the men that are brought into the work know nothing of statistics: they should be trained in the very elementary work of census-taking and of statistical science. How much more economical for the government to keep its experienced statisticians busily employed in the interim of census-taking, even if they do no more than study forms, methods, and analyses, connected with the presentation of the facts of the preceding census. Money would be saved, results would be more thoroughly appreciated, and problems would be solved.

Our State and Federal governments should be vitally interested in the elevation of statistical work to scientific proportions: for the necessary outcome of the application of civil service principles to the conduct of all governmental affairs lies in this, that as the affairs of the people become more and more the subjects of legislative regulation or control, the necessity for the most accurate information relating to such affairs and for the scientific use of such information increases.

The extension of civil service principles must become greater and greater, and the varied demands

which will be created by their growth logically become more exacting, so that the possibilities within the application of such principles are therefore not ideal, but practical in their nature. And these potentialities in the near future will enhance the value of the services of trained statisticians.

The consular and diplomatic service, as well as other fields of government administration, come under this same necessity. The utilization of the consular service for original investigations creates in itself a wide reaching statistical force, and one which should be competent to exercise its statistical functions with all the accuracy that belongs to science. So government should supplement college training with practical administrative instruction, acquired through positive service in its own departments.

This appeal that statistical science be taught in our colleges comes to the Economic Association more forcibly than to any other. The beginning which has been made in this direction in this country is honorable indeed. Shall it be supplemented in the great universities and leading colleges of America? Do not think for a moment that if the teaching of statistical science be incorporated in our college courses the country will be flooded with a body of statisticians. There is enough work for every man who understands statistical science. He need not be employed by government. The most brilliant achievements of the European statisticians have been secured in a private or semi-official way. The demand will equal the supply, and the demand of the public for statistical knowledge grows more and more positive, and the supply should equal the demand.

General Walker in a letter in 1874 said: "The country is hungry for information: everything of a statistical character, or even of a statistical appearance, is taken up with an eagerness that is almost pathetic; the community have not yet learned to be half skeptical and critical enough in respect to such statements." He can add, Statistics are now taken up with an eagerness that is serious.

"Know thyself" applies to nations as well as to men; and that nation which neglects to study its own conditions, or fears to study its own conditions in the most searching and critical manner, must fall into retrogression. If there is an evil, let the statistician search it out: by searching it out and carefully analyzing statistics, he may be able to solve the problem. If there is a condition that is wrong, let the statistician bring his figures to bear upon it, only be sure that the statistician employed cares more for the truth than he does for sustaining any preconceived idea of what the solution should be. A statistician should not be an advocate, for he cannot work scientifically if he is working to an end. He must be ready to accept the results of his study, whether they suit his doctrine or not. The colleges in this connection have an important duty to perform, for they can aid in ridding the public of the statistical mechanic, the man who builds tables to order to prove a desired result. These men have lowered the standard of statistical science by the empirical use of its forces.

The statistician writes history. He writes it in the most concrete form in which history can be written, for he shows on tablets all that makes up the Commonwealth: the population with its varied

composition; the manifold activities which move it to advancement; the industries, the wealth, the means for learning and culture, the evils that exist, the prosperity that attends, and all the vast proportions of the comely structure we call State. Statistical science does not use the perishable methods which convey to posterity as much of the vanity of the people, as of the reality which makes the Commonwealth of to day, but the picture is set in cold, enduring, Arabic characters, which will survive through the centuries, unchanged and unchangeable by time, by accident, or by decay. It uses symbols which have unlocked to us the growth of the periods which make up our past—they are the fitting and never changing symbols by which to tell the story of our present state, that when the age we live in becomes the past of successive generations of men, the story and the picture shall be found to exist in all the just proportions in which it was set, with no glowing sentences to charm the actual, and install in its place the ideal: with no fading colors to deceive and lead to imaginative reproduction, but symbols set in dies as unvarying and as truthful in the future as in the past. The statistician chooses a quiet and may be an unlovely setting, but he knows it will endure through all time.

The Sociological Character of Political Economy.

BY FRANKLIN H. GIDDINGS.

Paper read at the second annual meeting of the American Economic Association, in Boston, May 23, 1887.

The aim of this paper is to set forth, briefly, a conception of Political Economy as a science of organic phenomena.

This conception is not opposed to that view which discloses the logical character of economic science, nor to that view which discloses its historical character. If valid, it should combine those two views into a scientific unity.

Neither does this conception remove the old landmarks by which the domain of Political Economy has been so long, and, on the whole, so satisfactorily defined. It does not attempt to make economic science co-extensive with the science of society, much less with the science of man. The phenomena of wealth are its subject matter. So far as it brings within the economist's consideration facts and principles that have been neglected or purposely excluded hitherto, it is because there seems to be reason for thinking that their exclusion limits or vitiates our knowledge of the production and distribution of wealth. These facts and principles belong all to one class. They are all involved in the reactions of wealth-production and distribution upon human nature and social organization. But according to

the conception here set forth, these reactions are not to be studied by the economist for their own intrinsic interest, as they are studied by the psychologist and sociologist, nor as subjects for approval or condemnation, as by the moralist, but because, having once taken place, they become, from that moment, antecedents of the further production and distribution of wealth.

Modern sociology differs from the older philosophy of history in the specific meaning it attaches to the proposition that the social aggregate is organic. When the biologist affirms that such or such an aggregate of units is an organism he not only means that it is composed of mutually dependent parts that are mutually helpful, he means specifically and chiefly that the habitual activities of every part mould and differentiate its structure, and that structure, in its turn, gives direction to activity. The boy who has worked daily from early childhood in needle-making becomes at sixteen a marvel of nervous and muscular coöordinations adjusted to that particular work. But at thirty he can learn no new dexterity. His physical and mental structure have lost plasticity and all his activities have become well-nigh automatic. In every organism, then, the essential fact to be noted is the reciprocal determination of structure and function. Activity modifies structure and structure gives direction to activity.

In the social organism one part of this process is seen in the evolution of institutions through the habitual activities of the people. Institutions are, in fact, nothing more nor less than certain forms of concerted conduct become habitual and authoritatively sanctioned. And every kind of social activity

evolves its corresponding institutions. There is an economic structure in society as there is a political, as there is an ecclesiastical structure. Consisting of the whole body of arrangements, customs and laws, by which men of different abilities combine their industrial efforts and distribute the product, it is by no means inconspicuous, though one great school of economists has very nearly ignored it. The other part of the organic process is the reaction of social activities upon human nature. They shape the physical, mental and moral constitutions of individual men. The habitual activities become physiologically organized in brain cells and nerve fibers. The aptitude and taste for them are hereditarily transmitted. So, in time, traditional ideas and sentiments become the controlling agent in all further social activity. In this fact lies the conservation of institutions, the stability of social order. Modes, directions and relative amounts of social action, and with them customs and institutions, can be modified, henceforth, only in the slow measure that the inherited thought and feeling of the people are changed. Now if society is in truth an organism answering to this description, that scheme of Political Economy which finds the sufficient ground of economic phenomena in a human nature conceived of as undergoing no modification that the economist is bound to note, is unscientific. Professor Cairnes in a well-known passage, says that the economist "starts with a knowledge of ultimate causes. He is already, at the outset of his enterprise, in the position which the physicist only attains after ages of laborious search." "In the conclusions and proximate phenomena of other branches of knowledge" he has ready at hand premises for the discov-

ery of which "no elaborate process of induction is needed." This passage, unless very broadly interpreted, is a pre-Darwinian utterance. So long as economists accept it in a narrowly literal sense their science will remain in a pre-Darwinian stage of development. We must read into it the evolutionary thought. We must accept the conclusions of other branches of knowledge as they stand to-day, not as they stood fifty years ago; and among these conclusions the most important for the economist is the doctrine that human nature and social institutions are not fixed products, but are still undergoing incessant modifications produced by those modes of daily activity which varying circumstances involve. If this doctrine is true, then, from the very nature of the facts, the problem before the economist is a double one. It includes the two questions: What and how does the social organism produce and distribute for its sustenance and growth; and, How does the character of the thing produced and the manner in which it is produced and distributed react on the organism? These two parts of the inquiry must be pursued together if we hope to discover true answers to either. If we neglect to investigate the reactions of economic activities, as those do who regard human nature as fixed, we are ignoring some of the chief conditions that are to determine the production and distribution of wealth in the next stage of the process.

The answer to be expected to this is that, in scientific procedure, we have a process called abstraction, whereby we eliminate all the troublesome radical quantities from our problems and enable ourselves to have an easy time with the

simple equations. Now abstraction is a very good thing provided we know what it is and know how to use it; but the notion of abstraction that has crept into Political Economy has no counterpart in any other concrete science. It is only a relative abstraction that has any value in concrete science. Psychology affords us the most serviceable example. In all cognition there is some feeling: in all emotion there is some thought. The two elements are never absolutely separated. But in formulating a theory of cognition we make relative abstraction of feeling. In what does this consist? Simply in subordinating in the consciousness of the student, that element which is subordinate in fact in the objective phenomenon studied. The thought process, from which feeling has almost departed, engages almost the entire attention of the investigator: but the feeling, that never absolutely disappears, is never absolutely forgotten. This relative abstraction is the only kind that has any proper place in Political Economy. When production and distribution, as determined by existing human nature and social organization, are relatively predominant in economic phenomena, as they were in England after the repeal of the corn laws, they will naturally occupy a relatively large place in the economist's scientific scheme. On the other hand, if the reactions of the modes of production and distribution for some time in vogue, have begun to disturb the social order, we are sure to see a partial neglect of the older economic questions and a concentration of attention upon the physiological, moral and political aspects of the industrial *regime*. There could be no more striking proof of the essential truth of the view here pre-

sented of the dual nature of the economic problem and the relativity of economic abstraction, than the phenomena of the world-wide labor movement, now in progress. This great upheaval has compelled economists, whether they would or not, to seek its causes in the action of economic forces upon the natures of men, and, in so doing, to admit that these forces are not entirely expended in the immediate creation of wealth, and to perceive that among its effects will be considerable modifications of social structure and function, which, in their turn, will affect all subsequent production and distribution.

Political Economy, then, as the science of wealth, is necessarily the science of the reciprocal relations of wealth and the social organism. Among English writers, the one who approached nearest to this conception was Malthus, who said that Political Economy was the science of man in his relations to wealth.

This conception necessitates several important changes in the traditional plan of our science.

If one compares a systematic work on physiology with a systematic work on Political Economy, his attention will be arrested by the great amount of descriptive matter in proportion to the logical matter in the one work, and the great amount of logical matter in proportion to descriptive, in the other. If political economy is a science of organic phenomena, we must devote far more time and space to description than any systematic English writer has done since Adam Smith. But this description must be something more than a mere narrative of facts and events, or such collections of unorganized materials as fill the bulky volumes of Professor Roscher. It

must be a description of economic phenomena in their relations to each other and to underlying principles, in a word, in their coördinations. I think we may say that this work has been most promisingly begun, and that our own association stands for most valuable contributions to it, already accomplished and to be accomplished in the future.

But we must guard against the mistake made by a few extremists of the historical school of undervaluing logical analysis. It is not quite creditable to the scientific sense of Political Economists that a dispute has arisen over the logical method of the science. In no other science, not even in psychology or ethics, is there any such dispute. In physics or chemistry or physiology it would be regarded by investigators of established reputation as evidence that the disputants were not quite within the scientific pale. The consensus of scientific opinion on this point has been well established since the publication of Mr. Mill's "Logic" and has been reduced to an exceedingly clear and simple statement by Professor Jevons. "However useful may be empirical knowledge," he says, "it is yet of slight importance compared with the well connected and perfectly explained body of knowledge which constitutes an advanced and deductive science. . . . The history of science would show conclusively that deduction was the clue to all the greatest discoveries. . . . The complete method consists in the alternate use of induction and deduction. . . . Though observation and induction must ever be the ground of all certain knowledge of nature, their unaided employment could never have led to the results of modern science."

Accepting the organic conception as our starting point, and admitting that the matter of our science

must be descriptive for the most part, but that the descriptive matter must be logically interpreted, the next question to consider is the proper order of investigation and the resulting subdivision of the science. We may make some havoc, now, with the traditional division into Production, Exchange, Distribution and Consumption.

We have to remember, first, that in an organic aggregate the unequal effects of different parts and functions upon each other is due in great measure to the unequal rigidity of the parts and the unequal constancy of their action. On this account the physiologist begins his exposition by describing those parts that are least plastic and those characteristics of organs and functions that are relatively constant. He makes the provisional assumption that they are constant. From this beginning he goes on to give an account of the characteristics that are relatively inconstant, being easily affected by changes of surroundings, habit and nutrition. Next, he shows how changes in activity and nutrition slowly modify organs and functions, and he is then ready to go back and correct the provisional assumption with which he started out, and show that the constancy presumed is only a relative constancy, and that the whole organism is undergoing a gradual evolution. Finally, he reconstructs the process of historical evolution through which the organism came to be what it is.

May we not find advantage in following a similar course in economic investigation?

Beginning the search for the relatively rigid and constant factors in economic phenomena, we shall find them to be (1) The economic institutions of com-

mon and statute law. These are the most inflexible, the least easily modified things the economist has to consider; all other factors have to shape themselves to these. (2) The economic customs of the people, that is, the arrangements and habits whereby they associate or compete in carrying on production; the ways in which they combine their efforts. (3) Those economic ideas and traits in the natures of men that have become hereditary. These, of course, are the usual ideas of the community, and the physical and moral traits of the great majority of men.

The plastic and modifying factors in the economic organism will be found in the ideas and traits that differ from the average type, and in the changing general conditions resulting from these, especially those results of plastic ideas that are embodied in inventions.

Neither in the usual nor in the occasional economic nature, shall we discover the famous economic man. The conceptions of wealth and value brought to light will be but vaguely like those set forth in economic definitions. For it is the popular conceptions of wealth in the concrete, not any notion of wealth in the abstract, that are the real antecedent of actual economic phenomena. What does a society crave? That it sets itself to produce. That determines what shall be wealth, and the proportions in which it demands the different sorts of wealth not only create the phenomena of value, but they determine the accumulation of capital, the organization of industry, the industrial vitality of labor, and, in fine, the reproductive, self-enlarging, self-perpetuating power of the economic life.

Is any concrete illustration needed of this truth? Look, then, at the mediaeval and the modern concep-

tions of wealth and their consequences. For the mediaeval mind the supreme embodiment of wealth was the cathedral, a structure not for the individual but for man; a structure in which centered the pride and devotion of high born and low alike, and into the building of which nothing but perfect materials and perfect workmanship might enter. By this ideal trade was controlled and labor organized. Cheapness was not a good. Fidelity, painstaking, the patient achievement of perfection were the industrial virtues, and by them the artisan was lifted up into a truly noble life. His guilds were associations for something more than organized resistance, and men and masters mingled in fraternal fellowship. To-day, the characteristic sign of the popular notion of wealth is cheapness. We demand abundance rather than quality. If commodities are cheap we do not always inquire, as Mr. Ruskin would have us, whether the money we save is the outcome of action that has created, or action that has annihilated, ten times as much. Business is debased. The moral sentiment pervading any trade is forced down, as Professor Adams has shown, "to the level of that which characterizes the worst man who can maintain himself in it." The mediaeval conception of wealth found the workman a serf and raised him to freedom. The modern conception of wealth found him a freeman; it has forced upon him the conviction that he must now protect his freedom by measures of defensive war.

Different communities and the same community at different times, will exhibit a great variety of economic human nature in all but fundamental characteristics. Through the comparative study of this

variety we shall reach the scientific reconciliation between those economists who hold that Political Economy should formulate an economic ideal with those who hold that it should concern itself only with the actual. Economic science can formulate no higher ideal than one derived from the most advanced ideas and practices found in actual life. If the economist, pursuing the study of the actual, faithfully describes the economic natures and practices of the most advanced men, he does, in so doing, forecast the economic ideal. And if the economic thought and action of the best communities or associations of men are described in contrast with the economy of communities or associations that are less perfect, whatever of moral obligation it may be the function of economic science to disclose, will stand out and speak out for itself. There will be no need of dogmatism or exhortation.

The comparative study of economic institutions and customs as we find them, and of the economic natures of men as we find them, constitutes the first part or division of the science. The second part has to do with the activities arising from economic desires and taking channels determined in part by economic institutions and customs. These activities constitute the actual phenomena of production and distribution. They are continually multiplying and assuming a bewildering variety of new forms, yet they are also undergoing a process of integration which brings them into orderly arrangement. In this part of the science, as in the former one, we may advantageously conform the order of exposition to the generality and constancy of the phenomena. So doing we shall first note two principal

ways in which the economic natures of men act themselves out in production and distribution. One way is through individual efforts, consciously or unconsciously combined. This is the constant and universal way, found wherever human beings exist, in whatever stage of culture. It is the way without which society could not exist at all. The other way is through the self-consciousness of the community, expressing itself in law and public opinion. This mode of action is found in all of the more highly evolved societies, but it is lacking in those that are less developed. It is a secondary mode in all and not absolutely essential in any. A community can always exist after a manner, without it. Do not understand me to mean that the individual is precedent to society, and that society is constituted by the aggregation of individuals, as used to be taught. All the latest researches of biology and ethnology go to show that the exact contrary is true; that society is precedent to the individual. But the primordial society is not a self-conscious society. The ties that bind its units together are physical forces and the ties of relationship, superstition and tradition. In society, as in the individual, true self-consciousness is of late birth. It is also, as compared with the great fundamental processes that are built up by the unconscious combination of individual efforts, very easily modifiable. There is perhaps no other organic product that is quite so sensitive to every influence and quite so plastic in form, as true public opinion.

Accordingly, the student should turn his attention to production and distribution, as determined by individual efforts, before undertaking to trace the economic action of the social self-consciousness.

Following still the method chosen, he will distinguish between two kinds of production. One is the primary, indispensable production of simple utility. The other is the secondary, immensely important, but not indispensable production of that complex utility called value.

Nearly every economist since Ricardo has been careful to assure us that wealth comprises only those useful articles that have value. But as a matter of fact, value is a comparatively late phenomenon in the evolution of wealth, and the conception of value is by no means a primary one in the evolution of economic science. The pioneers who clear farms in the wilderness and store their cellars with food, and wear clothing spun and woven in their own kitchens, may have no experience of the facts of value in the economic sense, but for all that, they are producers of wealth. Primitive communities periodically dividing their lands, or cultivating them in common, and dividing the produce, show us nothing that, in the strict economic sense, can be called value, but are they therefore destitute of wealth? Concrete embodiments of utility are what the unlettered man understands by wealth. The production of these is the primary economic process, and I think that no one who has carefully studied the profound work of Professor Jevons will hesitate to admit that "the best employment of labor and capital by a single person"—the entire phenomena of exchange and value being left out of consideration—is a question that must yet be treated in economic science.

Furthermore, I wish to maintain that value itself is a *mode of utility*. It is with diffidence that I vent-

ure to criticise Professor Jevons, but I am obliged to think that he just fails of carrying out his thought to its legitimate conclusion. Defining value as ratio of exchange he says that it *depends on utility*. Now value is not a ratio, though its mathematical expression is a ratio, and it does not depend on utility for it is utility, evolved in a certain specific way, and quantitatively limited. The whole difficulty attaching to this subject seems to have arisen from substituting the quantitative expression for the thing expressed. If we should speak of weight as a quantity or measure of gravitation, and then make abstraction of the gravitation, we should have left a mathematical formula only, and that formula would not be a definition of weight. So it is with value. Weight is not the ratio by which the measurement of gravitation is expressed, it is gravitation measured. Value is not the ratio by which the measurement of utility is expressed, it is utility measured. It is when a comparison of utilities begins, and one utility is measured in terms of another, that value in its most general form arises. This process of comparison cannot go far save in one specific way, which has its origin in the fact that utility is relative, arising, as Professor Jevons says. "from commodities being brought in suitable quantities and at the proper times into the possession of persons needing them." To a large extent this is done by an immediate process, in the production, by labor, of concrete goods to be consumed by the laborer. But to a considerable and always increasing extent this process fails. The laborer finds that, in spite of his best endeavors, he produces more of some things than he can use and less of others than he wants. His surplus would

be useful if put into the possession of persons needing it, and this potential utility is therefore made actual by exchange. It is this potential utility that is habitually compared, measured, valued, as a part of the process of exchange. Consequently, value, in the economic sense, *is the potential utility that is measured and made actual by exchange.*

It follows that exchange is a secondary process of production. It is complex production in distinction from simple production, and value is complex in distinction from simple utility. The creation by labor of immediate, actual utility, plus more or less of potential utility, is the primary process. The creation of value presupposes the creation of unexchanged utility. A community may exist without the secondary process, it can not exist without the primary. The primary is constant and universal, the secondary merely common; and that definition of Political Economy which calls it the science of exchanges, is absurd.

Perhaps another result of the method here proposed will be a more distinct recognition than we have had of the incidental character of the process of distribution. As Professor Clark has so clearly shown in his "Philosophy of Wealth," there is no separate process of distribution. There is no part of the social organism having distribution for its specific function. Distribution is simply an incidental consequence of production. The less developed a society is, the more largely is distribution determined by the primary process of production. What the fisherman or the peasant farmer produces of actual utility, he has. The more perfectly developed a society is the more largely is distribution deter-

mined by the secondary process of production; that is, by exchange. Goods are now produced to sell. The condition of the market, commercial advantage or disadvantage, relative skill in buying and selling, determine the shares of wealth that men obtain.

We shall never fully understand either distribution, exchange or simple production, considered as results of individual economic effort, until we get firm hold of the truth that these are not three separate processes but only three developments of one process, in which distribution cannot be separated from exchange and simple production, nor exchange from that production of utility by labor which it presupposes. The traditional partition of economic science into departments of production, exchange, distribution, etc., not only does not correspond to the objective fact, it misrepresents the objective fact.

Individual economic efforts are coördinated chiefly through an unconscious physical process by the tendency of all activities, considered as physical forces, to reach an equilibrium. The highest and most difficult achievement in this part of economic science is to determine the laws of equilibrium of the complex system of forces in action. Among the difficult problems that have not yet received their final solution are those of demand and supply, cost of production, the relation of competition to combination, the relation of commodities to money and of money to prices, and the rhythms of credit and industrial prosperity. All these are problems of economic physics, and will be solved, when they are solved, by the application of the mathematical method of Gossen, Jevons and Walras. The common mistake of the mathematical economists is in assuming that there is nothing in Political Economy but economic physics.

In affirming, a moment ago, that distribution, exchange and simple production are but developments of a single process, I was careful to say, "considered as results of individual economic effort." The necessity of this qualification becomes apparent when we turn our attention to the economic function of the social consciousness. We then discover at once that this function consists, in large measure, in deliberately separating production, exchange and distribution, into distinct processes. It distributes wealth to some extent by actually taking it from the hands in which production and exchange would leave it, and giving it to others. It decides when, how and to what extent exchange shall be permitted. It prohibits the production of certain things and the production of anything under certain conditions.

The study of this economic action of the social organism through its self-consciousness corresponds very nearly to the study of what Adam Smith meant by "systems of Political Economy," that is, the systems of economic policy which nations consciously adopt and put in force by legislation. It comprehends all that modern writers have included under the designation of applied political economy, conscious that it is something that the economist cannot neglect, but debarred by the old conceptions from treating it as an integral part of the science. If there is but one social organism which acts in the two broadly contrasted ways that have been described, we can have no complete theory of production and distribution by neglecting one-half of the process, and the study of the economic action of the social organism through its self-consciousness is just

as legitimately an integral part of our science as the study of its action through individual efforts.

The third grand division of Political Economy will deal with the reactions of production and distribution upon the social organism. I shall not undertake, at this time, to follow out the subdivision of this part. Let me merely say that it will include, besides the study of the consumption of wealth, an investigation of the reactions of the ways of getting and dividing wealth, and of the gradual change, under these reactions, of the economic natures of men and the economic institutions and customs which had been provisionally assumed to be fixed. I know of nothing more dreary and unimportant than the customary text-book chapter on the consumption of wealth. Nothing in economic science is of such immeasurable importance as the production, partition and consumption of wealth as related to the evolution of the social organism, and I believe that future students will find the study of this relation as much more fascinating than the study of other economic processes, as students of biology find the study of the reactions of activity upon the organism more fascinating than the mere dissection of parts.

Prepared by studies in this last field, economists may, I think, investigate with some success the past evolution of the economic organism. The historical economists are accumulating invaluable data for this work, but we are not yet able to use it to the best advantage. We lack as yet what the biologist calls the evolutionary sense. And this sense is to be acquired by the economist as by the biologist, chiefly by studying in the most common phenomena about us, the reciprocal reactions of the organism and its activities.

I believe that this scheme of Political Economy constitutes an organic whole. But because of its magnitude, and because its different parts require different mental qualities that are not always united in one student, it will resolve itself for working purposes into a number of special sciences. That part which I have called Economic Physics will include all of the *a priori* economy that culminated in the earlier writings of Mr. Mill. Professor Jevons was right, I think, in his belief that all of that economy will come within the range of the mathematical method. But besides Economic Physics there will be a Descriptive Political Economy, identical with what I have called the first division of the science; an Economic Politics, co-extensive with the second part of the second division, and an Economic Biology and Psychology, co extensive with the third division. My purpose is accomplished if I have shown that these cannot be independent, or mere loosely related sciences, but that they are true organic parts of a perfectly organic whole.

Some Considerations on the Legal-Tender Decisions.

BY EDMUND J. JAMES, PH. D., PROFESSOR IN THE UNIVERSITY OF PENNSYLVANIA.

Paper read at the joint session of the American Economic and Historical Associations at Cambridge, Mass., May 24, 1887.

No decisions of our Supreme Court possess a more enduring interest for the student of our Constitutional History and Law than those rendered in the so-called Legal-Tender Cases. They are memorable on account of a number of important and in some respects unique circumstances. The question at issue belongs to the most important questions which have ever come before that court for adjudication, being nothing less than the power of the Federal Legislative to fix the legal means of payment at its discretion. It involved the right of the Federal Government to abolish gold and silver coin as the only means of debt payment, and substitute therefore mere pieces of paper, bearing the promise of the government to pay at its pleasure. It is, of course, difficult to conceive of a more far-reaching power, or one which, if exercised in certain ways, could affect more intensively our industrial society.

Additional interest is lent to the cases by the fact that the Chief Justice of the Court, when the first case came before it, was the man, who as Secretary of the Treasury, was chiefly responsible for the very legisla-

tion, the constitutionality of which he was now called upon to determine; by the further fact that a decision rendered in one year was reversed by the court almost within a twelve month: and by the circumstance that a third decision was rendered within less than fifteen years, which, though not reversing, but rather confirming the decision of the court in the second case, yet repudiated, or at least ignored entirely the reasoning upon which the court had rested its opinion on that occasion.

An unpleasant sort of interest is moreover attached to it because of the deplorable fact that in connection with these decisions the charge of partisanship was openly made, and what is still more to be regretted, widely believed, even the Chief Justice himself not being able to conceal altogether his opinion that the decision in the second case was the result of conscious desire on the part of the executive to influence the action of the court in the direction of approving the course of the Legislative department. The opinions of the various members of the court give evidence of the excitement and bitterness of the discussion.¹

¹The following letter from Judge Hoar to the writer is of great interest apropos of this charge:

WORCESTER, June 18, 1887.

MY DEAR SIR—The pressure of some important professional and other duties has brought my correspondence sadly behindhand. I have to ask your pardon for great delay in answering your letter.

No sillier calumny was ever uttered on the stump than that which imputes the selection of Judges Strong and Bradley to a desire to reverse the legal-tender decision. Their names were sent to the Senate before that decision was made. General Grant, Secretary Fish and Attorney-General Hoar have emphatically denied the charge. There never was the smallest particle of evidence in its favor that I ever heard. Certainly no reason need be sought for their selection other than the character and learning of the men. Judge Strong

These cases taken together illustrate some of the most important features of our constitutional and political life, and connected as they are at several points with decisions running back in an unbroken line for nearly a century, they offer us an excellent example of our methods of solving difficult constitutional questions, and admirably illustrate the principles of constitutional interpretation which underlie our whole system of law and politics.

They show forth in a clear light, for instance, the great influence which the executive and legislative may have on the attitude of the court toward constitutional questions, even though they may not exercise their undoubted privilege of affecting the make-up of the court by adding new men. If, for example, it had been possible to get the court to express its opinion of the constitutionality of such legislation, before it had been actually made, i. e., in advance of the pas-

has lately retired from active duty with universal respect—a model of the judicial character. I suppose the general voice of the profession and of his brethren of the bench would place Judge Bradley at the head of all living American jurists. It would have been difficult, if not impossible, to have found a republican fit for that high judicial position who was not of their way of thinking on the legal-tender question. The Supreme Court of every Northern State where the question was raised, and that was nearly all, had held the same way, as had the eminent Chancellor of Kentucky.

Judge Hoar, General Grant's Attorney-General at the time of the nomination of these two judges, on whose advice they were selected, stated some time since in a public letter, that he knew when the nomination was made that Judge Strong, in an opinion delivered when on the Supreme Bench of Pennsylvania, had upheld the legal-tender act; but that he knew nothing of Judge Bradley's views, except that as counsel for a railroad, he had advised them that they were bound in honor to pay previously contracted debts in gold.

I am, yours very respectfully,

GEO. F. HOAR.

sage of the legal-tender laws, it is possible that we have never had a court which would have held such legislation to be constitutional. Whereas, after the laws had been actually passed, and been in force for years, we found a court to decide that they were constitutional as war measures, and fourteen years later another one which declared them to be constitutional, no matter whether passed in times of war or peace.¹

The reason for this is obvious. If it had been possible to get the opinion of the court beforehand, the latter would have been bound to be sure that the proposed laws were constitutional before it could say so, i. e., it must have been positively sure beyond a reasonable doubt. In other words, it would then have occupied the position which every legislature should take. On the other hand, when the bill came up before them as an accomplished fact, it came with all the prestige that accompanies the act of another and co-ordinate branch of the government. The presumption is in all such cases in favor of its constitutionality. The courtesy due a separate and independent branch of the government requires great care and caution in treating such cases, or as Justice Chase puts it in that first decision, declaring the legal-tender laws unconstitutional, so far as applicable to debts contracted before their passage : "The court always approaches the consideration of questions of this nature reluct-

¹In some of the States notably, Maine, New Hampshire and Massachusetts, the Governor, council, or either House of the Legislature may call upon the Supreme Court to give their opinions upon important questions of law or upon solemn occasions. If this were allowed by the Constitution of the United States, it would be possible to get the opinion of the court beforehand, and it is probable that the course of our constitutional development would have been somewhat different.

antly, and its constant rule of decision has been, and is, that acts of Congress must be regarded as constitutional, unless clearly shown to be otherwise."

Justice Strong puts it still more emphatically in the second legal-tender case:

"A decent respect," he says, "for a coördinate branch of the government demands that the judiciary should presume, until the contrary is clearly shown, that there has been no transgress of powers by Congress, all the members of which act under the obligation of an oath of fidelity to the Constitution. Such has always been the rule. In the case of Commonwealth vs. Smith (Binney 4, 123), the language of the court was: 'It must be remembered, for weighty reasons, it has been assumed as a principle in construing constitutions, both by the Supreme Court of the United States, by this court, and by every other court of reputation in the United States, that an act of the Legislature is not to be declared void unless the violation of the Constitution is so manifest as to leave no room for a reasonable doubt.' It is incumbent therefore upon those who affirm the unconstitutionality of an act of Congress to show clearly that it is in violation of the provisions of the Constitution. It is not sufficient for them that they succeed in raising a doubt."¹

¹"A reasonable doubt," says Judge Cooley, "in summing up a discussion of this subject, must be solved in favor of the legislative action and the act be sustained." (*Constitutional Limitations*, p. 218). *If an act may be valid or not, according to circumstances, a court would be bound to presume that such circumstances existed as would render it valid.* (*Talbot vs. Hudson*, 16 Gray, 417.) This is of special interest in connection with the third legal-tender case in which it was decided that if Congress could pass a legal-tender law as an exigency law, the court would be bound to assume an exigency when such a law was passed.

Harris, J., New York Court of Appeals, 17, N. Y. 235, declared: A legislative act is not to be declared void upon a mere conflict of interpretation between the legislative and the judicial power. Before proceeding to annul by judicial sentence what has been enacted by the law-making power, it should clearly appear that the act cannot be supported *by any reasonable intendment or allowable presumption.*

It is reasonable to expect that where a construction has once been placed upon a constitutional provision it will be followed afterwards,

It is evident that so long as this continues to be the attitude of the court, and that will doubtless be as long as the court shall last, the legislative branch has a great vantage ground in deciding what shall be the interpretation put upon the various clauses of our constitution, since by adopting any given interpretation, as evidenced by the passage of a particular law, they thereby raise a presumption in favor of an interpretation which maintains the constitutionality of action already taken.

All this is, of course, entirely aside from the influence which the legislative branch may exercise by adding new members to the court whose opinions are known beforehand. The first legal-tender case was argued in the December term of 1867, and was then postponed for a fuller argument until the December term of 1868. During the pendency of the cases two vacancies occurred on the bench, one by resignation of an existing member, and one by a law of Congress providing for an additional justice.

even though its original adoption may have sprung from deference to legislative action rather than from settled convictions in the judicial mind. (Cooley, Const. Limit., p. 220; People vs. Blodgett, 13 Mich., 127).

So strong is this legal principle that the court (in the case of Rogers vs. Goodwin, 2 Mass., 475; Cooley's Limitation, p. 84), said of a certain construction: "Although if it were now *res integris* it might be very difficult to maintain such a construction, yet at this day the argument *ab inconveniente* applies with great weight. We cannot shake a principle which has so long and steadily prevailed."

The Supreme Court of Massachusetts, 14 Allen, 389, held that the constitutionality of the act of Congress making treasury notes a legal tender, ought not to be treated by a State Court as an open question after the notes had practically constituted the currency of the country for five years. (Cf. Cooley, Constitutional Limitations, p. 218.)

The decision declaring the legal-tender laws unconstitutional was read February 7th, 1870, and was supported by a majority vote of two in a court of eight justices. The resignation of Justice Grier, together with the new position, left two places to be filled. To these Justices Strong and Bradley were appointed. Justice Strong had already in Pennsylvania rendered an elaborate opinion from the Supreme Bench of that State in favor of the constitutionality of this legislation, and it was claimed that the sentiments of Justice Bradley were also known to be in favor of this side of the case. However this may be, the whole thing shows how easily this conjunction of affairs could have been used for just such a purpose, and it is noteworthy that one of the immediate results of the new appointments was a reconsideration of the matter in the case of Knox vs. Lee, and a reversal of the opinion of the court by a majority of one in a court of nine justices.

Another remarkable feature of these cases, or rather decisions, is the almost unanimous character of the last, and most sweeping one of all, as compared with the close votes of the court on the preceding cases. Five to three stood the first vote. Five to four the vote that reversed the first decision and rested the right of Congress to pass such laws on the war powers of the constitution; while the last, which decided that Congress had such power also in times of peace, was rendered by a vote of eight to one. This phenomenon can hardly be explained by the supposition that the court was slowly but steadily packed for this special purpose in the way indicated above as a possible one.

Equally noteworthy is the entirely different char-

acter of the reasoning in the last and the two former cases. The discussion in both the first cases turned on what was essentially an economic point. The Court in the case of Hepburn vs. Griswold, held that conferring the legal-tender character upon the notes of the government was not a necessary or appropriate means of carrying out any of the functions of the government, because as a matter of fact this circumstance did not improve the quality of the notes as currency. This view was supported by what was essentially an economic argument on the nature and functions of a government currency. In the decision Knox vs. Lee, the court joined direct issue on this very point, and maintained that the legal-tender character was necessary to make these notes serve the purpose for which they were issued, and that they were therefore a necessary and proper means of carrying into effect an acknowledged power of the Federal Government.

In the last case the court quietly passes over this whole argument and rests the decision upon what is much more a legal or constitutional ground. In both the former cases the court was evidently influenced, to a large extent, by what it supposed would be the economical evils of a contrary decision. In the last the court refused to ask itself the question whether the issue of legal-tender notes is or is not, economically speaking, a good or bad thing, and confined itself simply to the question whether Congress had the power or not.

This is, indeed, one of the interesting circumstances connected with this whole question, whether before the court, or in the press and on the rostrum before the general public. The court is besought by those

opposed to the policy of issuing such currency to save the country from the evil effects of legal-tender notes, by declaring that Congress has no power to issue them. This of course is no proper appeal to make to the court. It has to decide a question of law and not of policy ; and no matter how clear the court might be that such and such a policy might be injurious, it has no business to place its veto on it, provided the body establishing the legislation has the power as a matter of law so to do. It will be found, I think, that this element of expediency of the exercise of the power in a certain way has largely influenced many in their judgement as to the actual conferring of the power as a matter of law.

This is acknowledged in a recent pamphlet devoted to an examination of Mr. Bancroft's "Onslaught on the Court,"¹ by Mr. McMurtrie of the Philadelphia bar—a man who is reputed to be one of the most clear-headed constitutional lawyers in the country. In one passage in the pamphlet referred to, he says, that he had always supposed that the decision of the question hinged really on whether one would take the strictly legal or the statesman's view of the subject, which of course means whether one would regard it as a question of law, which it really is, or of politics, which it is not.

Let us now look squarely at the case as it appeared before the court, with a view of arriving at an opinion as to the merits of the case from a constitutional point of view. In presenting the arguments, I shall use the best statement of them which I have been able to find, whether in the opinion of the court, the argument of counsel or the brochures of publicists.

¹The Constitution wounded in the House of its Friends.

Congress had actually passed a law making its notes a legal-tender. This creates a presumption clear and distinct in favor of the constitutionality of the measure, according to the uniform decision of the courts of last resort in our country. I quoted above the opinion of the court as to the necessity of having a clear demonstration of the unconstitutionality of a measure, before it would upset the action of Congress. Chief Justice Chase himself, at the very session in which the Hepburn case was decided, held in *Veazie Bank vs. Fenno*, that the practice of the government was one of the elements in deciding a constitutional case.¹ In a word then, the burden of proof rests in a legal point of view, entirely upon those who attempt to establish the unconstitutionality of any given act of Congress.

In answer to this, it is held in the first place that the constitution, on its face, does not confer the power to issue legal-tender notes. If by this is meant that it does not confer that power in so many words, then it will of course be admitted. But it does not confer the power to carry on war, or to suspend the *habeas corpus* act, or to pass penal laws to sustain its legislation, or to establish a national bank, or to emit treasury notes, or to exercise the right of eminent

¹Great deference has also been paid in all cases to the action of the Executive Department, where its officers have been called upon under the responsibilities of their official oaths, to inaugurate a new system, and where it is to be presumed they have carefully and conscientiously weighed all considerations and endeavored to keep within the letter and spirit of the constitution. If the question involved is really one of doubt, the force of their judgment, especially in view of the injurious consequence that may result from disregarding it, is fairly entitled to turn the judicial mind.—(Cooley's *Limit.* p. 83.)

domain, or to sue or to make contracts, or to collect statistics other than the mere numbering of the persons, or to construct canals or railroads, or assist in their construction, or to establish for itself a priority of payment over debts due to other creditors, or to establish observatories, or to erect light houses, etc., etc.—all of which are now acknowledged to be part and parcel of the powers conferred by the constitution.

If, however, what is meant is that the power is not included in any power expressly granted, then this is a question for investigation and examination. Has Congress any power whatever over the legal tender of the country? It must be admitted that, judging by the uniform practice of the government and the decisions of the courts, it has the power to make gold and silver, or any other metal, a legal tender. Now whence does it derive this power? It is certainly not expressly granted, for it is quite distinct from the power to coin money and regulate the value thereof. It can only be inferred as an incidental power. It would seem, indeed, from an examination of all the clauses bearing on the subject, both those relating to the restrictions on the states and those conferring powers in regard to it on the national government, that whatever power there is to make a legal tender has been conferred on the Federal government. We shall return to this point later.¹

It is urged that it was the intention of the framers of the constitution to prohibit the Federal government from exercising any such power. If this were really so, it would have been a very simple matter to incor-

¹Cf. McMurtrie's argument.

porate their views in a clause like that referring to the states, forbidding them to make anything but gold and silver coin a legal-tender in the payment of debts. It may be replied to this that they thought they had, since they did not grant it in express terms, and the new government was to be a government of limited powers. This is not satisfactory, however, since the whole country gave, at the time of the adoption of the constitution, good evidence that they were afraid that a government had been constituted with they knew not what powers, as is amply shown by the first ten amendments.

However this may be, the whole argument from intention is met in the following way:

1. The intention has little to do with the question, the real point being not what they intended to do, but what they actually did do, as a matter of fact. No court of law allows intention to do a thing to be plead against a plain failure to do it. Even in the construction of wills, contracts, etc., the question is not what the person wanted to do, but what he did do. In other words intention is to be inferred from actually what is said. If any other principle were adopted there would be no way of settling questions of dispute where the parties to a contract, for example, have different ideas as to what the instrument means, since each one intended to do a different thing. Take a case, such as occasionally occurs in private law, and nearly always in public law, where the parties are trying to overreach each the other. Each hopes to get such provisions into the law or contract as will redound to his own benefit, or incorporate his own ideas. Now it is evident that no court could undertake to compare these various intentions, and see

which on the whole is the fairer or better, etc., and then put that into the law as the meaning.

2. Intention in the case of a public body, such as a legislature, as Mr. McMurtrie rightly argues in the pamphlets above mentioned, does not at all mean the same thing as intention when applied to morals, or that part of law founded on what we call the moral nature, i. e., consciousness of meaning or the exercise of will. The only reliable guide to intention is to look to the words and the circumstances under which they were used. People are held to mean what their words or acts infer. This is a perfectly well-accepted principle of law, and finds expression in many legal decisions which the court is bound to consider in deciding the case. No statute is construed by referring to the private gossip of the draughtsman, or even by statements made in debate. (Minnesota 10, 126.) As to any other instrument that is to be an authority or guide, and require construction, such as deeds, wills, contracts, etc., notoriously the most improper man on earth to expound a writing is the writer. He alone of all men can not distinguish clearly what is and what is not intended by what is written, and separate it from what floated in his mind but did not reach the paper. (3 Howard 24 Gibson, C. J.: Serg. & Rawle 12, 352; 7 Harris, 156; Black C. J. & Lewis 2 Casey 450.)¹

¹We know of no rule for construing the extent of such powers other than is given by the language of the instrument which confers them, taken in connection with the purposes for which they are conferred. (Gibbons vs. Ogden, 9 Wheaton, 1-240; Meyer's Digest, §1183; C. J. Marshall.)

Though a particular object may have been in the contemplation of the Legislature, a court is not bound to conclude that they have done what they intended, unless fit words be used for that purpose. (1 Paine, 35.)

3. We are, therefore, not entitled, on principles of law, to inquire into intention in this case in the sense in which that term is ordinarily used, owing to the evident impossibility of really ascertaining it. It is well known that there was a difference of opinion as to the wisdom of conferring this power, and language was finally adopted which seemed to satisfy both parties. It is evident that

The spirit of the act must be extracted from the words of the act, and not from conjectures. *Aliunde*, (*Gardner vs. Collier*, 2 Peters, 73).

The meaning of the Legislature is to be ascertained from the language of the statute. (*Platt vs. Union Pacific*, 9 Otto, 58.)

In expounding this law the judgment of the court cannot in any degree be influenced by the construction placed upon it by individual members of Congress, in the debate which took place on its passage; nor by the motives or reasons assigned by them for supporting or opposing amendments that were offered. The law as it passed is the will of the majority of both Houses, and the only mode in which that will is spoken is in the act itself; and we must gather their intention from the language there used, comparing it when any ambiguity exists with the laws upon the same subject, and looking if necessary to the public history of the times in which it was passed. (*Aldridge et. al. vs. Williams*, 3 Howard, 24).

The object of construction is to give effect to the intent of the people in adopting it. But this intent is to be found in the instrument itself. (*Cooley's Limitations*, p. 68.)

To adopt the principle of looking beyond the instrument to ascertain its meaning, when it may be fairly inferred from the instrument itself, the constitution may be made to mean one thing by one man and something else by another, until in the end it is in danger of being rendered a mere dead letter. (*People vs. Pardy*, 2 Hill, 35).

It follows from these principles that the statute itself furnishes the best means of its own exposition, and if the sense in which the words were intended to be used can be clearly ascertained from all its parts and provisions, the intention thus indicated shall prevail without resorting to other means of aiding in the construction. And these familiar rules of construction apply with at least as much force to the construction of written constitutions as to statutes; the former being presumed to be framed with much greater care and consideration than the latter. (*Green vs. Weller*, 32 Miss., 650-678).

there is no ground here to found intention in any sense of that term which would correspond to its use in ordinary life. Moreover, we must remember that the men who drew this instrument were not the parties who enacted it into law. And certainly the latter are entitled to as much consideration in this matter as the men who drew the writing. This would lead us into an examination of the ideas and intentions of each man who voted for the ratification of the instrument. This is evidently absurd as a principle of law. The case is exactly analogous to one which we find every day in our ordinary legislatures, where one party wishes to adopt a certain policy and the other is opposed, and they finally agree on a law because each side thinks that it favors its own views. No court could go into an investigation of exactly what each member thought he was voting for, when he cast his vote on one side or the other. And it has repeatedly happened in the course of judicial decision in this country that the courts have held that a given law meant a very different thing from that which it seemed to most of the legislators who approved of it. Naturally enough, for the only question which the court has before it is not what the legislators though they were doing, but what they actually did do in the case.¹

¹More than that the legislature is not even allowed by the courts to construe their own statutes after any action has occurred under them :

Statutes declaratory of the proper construction of a law are unconstitutional and void as far as they affect private transactions. (14 Otto, 677). This it will be seen is of such a sweeping character that even if the unanimous vote of the Constitutional Convention had been cast in favor of a given interpretation, the court would not only

However, suppose we waive this point, which actually bars out all reference to the intention of the framers, let us look a moment at the evidence of intention which is before us. The court in the last decision says: "The reports which have come down to us of the debates in the convention that framed the constitution afford no proof of any general concurrence of opinion upon the subject before us." This remark becomes the object of some pretty severe criticism on the part of Mr. Bancroft and others. And yet it seems plain that the court is justified in this view by the actual record of the convention.

The only debate which throws any light on this question was held on August 16th, 1787. It occurred on the proposition to cut out the words—"and emit bills of credit"—which formed part of the draft submitted to Congress. Morris was in favor of cutting it out with the idea that if the clause were dropped

not be bound by it, but would be bound to declare that the opinion was valueless in point of law.

The meaning of a statute is to be ascertained from the language used and not by inquiring of the individual members of the legislature what they intended by enacting the law. If the natural import of the law is different from the effect intended to be given to it by those who were for it, the only safe rule is to take the act as it stands as conveying the intention of the legislature. (9 Otto, 58).

What passes in Congress upon the discussion of a bill can not become a matter of strict judicial inquiry in construing the statute, and little reliance ought to be placed upon such sources of information. (2 Story, 648).

As worded in another case:

It is not even allowable for a legislature, even by a formal vote, to construe a law which it has itself passed—except under such forms as may be taken to have established a new law; for the vote of a legislature, that a statute passed by it means such and such a thing, has been frequently disregarded by the courts as being the exercise of a judicial power by a legislative body, and must always be determined

Congress would have no power to issue treasury notes. Butler seconded the motion. Madison thought they had better simply insert a prohibition to make them a legal-tender, evidently showing that he thought, if the power to emit bills were conferred in that simple way, that the government would have authority to make them legal tender. Morris, that striking out these words would still leave room for a responsible minister to emit treasury notes. Gorham thought that leaving out the clause would be better without inserting any prohibition, thinking that the words as they stood would suggest and lead to the emission. Mason thought Congress would not have power unless expressed (thus differing from Morris), and expressed himself as unwilling to tie up the hands of the government by such a prohibition. Gorham thought that the power so far as safe would be involved in the borrowing power. Mercer was opposed to a prohibition for two reasons: 1st, he was in favor of paper money on general principles. 2nd,

as of no effect at all so far as regards acts performed before such declaration. (See 39 Penn., 137: Cooley's Limitations, p. II3.)

The clearest manner, therefore, in which legislative intent can be ascertained, i. e., by a formal vote on the very question of meaning, has no binding force whatever on the courts.

As Smith writes it:

When we once know the reason which alone determined the will of the law-makers, we ought to interpret and apply the words used in a manner suitable and consonant to that reason, and as will be best calculated to effectuate that intent. Great caution should always be observed in the application of this rule to particular given cases; that is, we ought always to be certain that we do know and have actually ascertained the true and only reason which induced the act. It is never allowable to indulge in vague and uncertain conjecture, or in supposed reasons and views of the framers of an act, where there are none known with any degree of certainty. (Smith on Stat. and Const. Const. 634).

it would not do to excite opposition of friends of paper money by a prohibition, evidently thinking if nothing were said about it, that every man would be entitled to his own opinion on the subject. Ellsworth thought it was now a good time to shut and bar paper money out, but he did not indicate whether this would, in his view, be accomplished by simply saying nothing about it. Randolph was opposed to depriving the government of the power altogether. Wilson thought it would be good to preclude paper money, but did not indicate how he thought it could be accomplished, whether by prohibition or by simply saying nothing about it. Butler was also in favor of taking away the power, but did not indicate how it had better be put. Read and Langdon were also opposed to giving this power to Federal Government, but did not indicate how their ideas should be incorporated.

The clause was then cut out by a vote of nine States to two. Madison adds a footnote that he decided the vote of Virginia by voting for cutting it out because he had become convinced that the government would have the power of issuing government notes as far as they could be safe and proper, and would only cut off the pretext for a paper currency. He does not give us the course of argument by which he arrived at this. Nor does he give us any clue as to whether the other members of the convention agreed with him. In a word, it is a purely private opinion of Mr. Madison which events have proved to be wrong. This is not the first time that an individual, in drawing a public document, thinking that he had included and excluded certain things, found out afterwards, when the instrument came up for adjudication, that he had made a mistake.

It is evident that nothing definite can be inferred from this record as to the intention of the convention.¹

About all that we can assert is that several members were in favor of refusing this power to the Federal government, that some were in favor of conferring it, that those who spoke on the topic were in doubt as to the effect of simply dropping the clause, and that as a matter of fact the clause was dropped. We have absolutely no means of knowing whether the majority of the delegates or states were opposed to granting this power, whether they thought that cutting out this clause would leave the question an open one, or, with Madison, that it

¹Cooley states the law as to the proper use of the proceedings of the convention, thus:

"When the inquiry is directed to ascertaining the mischief designed to be remedied or the purpose sought to be accomplished by a particular provision, it may be proper to examine the proceedings of the convention which framed the instrument; where the proceedings clearly point out the purpose of the provision this aid will be valuable and satisfactory; but where the question is one of abstract meaning it will be difficult to derive from this source much reliable assistance in interpretation. Every member of such a convention acts upon such motives and reasons as influence him personally, and the motions and debates do not necessarily indicate the purpose of the majority of the convention in adopting a particular clause. It is possible for a clause to appear so clear and unambiguous to the members as to require no discussion, and the few remarks concerning it may be positively misleading. It is also possible for a part of the members to take the clause in one sense and a part in another. And even if we were certain we had attained to the meaning of the convention, it is by no means to be allowed a controlling force, especially if this meaning appears not to be the one which the words would most naturally and obviously convey. For as a constitution does not derive its force from the convention which framed, but from the people who ratified it, the intent to be arrived at is that of the people." (Cooley Limitations, p. 81.)

would give us all the benefits and none of the evils of a paper currency, or whether they thought that the government would still have the power under other grants, and that they could safely afford to let the matter rest or whether they thought anything at all about the matter. One thing, however, is significant, and that is that several members thought that if the clause to emit bills on the credit of the United States were left standing, it would carry with it, in the absence of a special prohibition, as a matter of course, the power to make them legal-tender, and others thought that the power to emit bills would be inferred under the borrowing power. As a matter of fact, the power of the government to emit bills of credit is as well acknowledged as any other power of the Federal legislative, or, as Chief Justice Chase decided in *Veazie Bank vs. Feno*, it is settled by the uniform practice of the government, and by repeated decisions, that Congress may constitutionally authorize the emission of bills of credit, and, that too, though the record distinctly shows that a clause conferring this power was struck out of the constitution as first presented after some debate.

There is, I suppose, little doubt that many of the most eminent men of the revolution thought that the power of making treasury notes a legal tender should not be granted to the Federal government. But their ideas before they went into the convention, have nothing, of course, to do with what was actually achieved. As the result of discussion a compromise was accepted, and like many another compromise the meaning of the instrument can not be ascertained by consulting those who are interested in a certain interpretation by securing the general

acceptance of which they would have gained their case.

As to what the early men thought the constitution, as actually adopted, really did say on this topic, we also have no satisfactory evidence ; but such as there is of it is rather in favor of the view that legal-tender power was conferred on Congress by the constitution. When we look in the *Federalist*, for example, to find out what was said on this point, we find curiously enough nothing whatever upon the subject. It must be a matter of surprise to every one, that if the case were so clearly made out as it claimed to be by those who hold this view, there should be no mention of the subject in this important series of papers. If the leading men of all parties were so clear in their ideas as to the importance of refusing this power of making a legal-tender, and were so confident that it really had been done, and it had really occupied such an important position in the public mind, it is remarkable that there should be absolutely no express reference to the matter.

It is also astonishing, if the view of those who think the power of making anything but gold and silver coin a legal-tender was denied the Federal government were correct, that there are so very few traces of any reference to the fact in the current discussions of the time in the conventions or in the press, especially if the general interest in the subject were so active as they would have us believe. There are almost no notices at all, even of the fact that paper emissions were forbidden to the states. Luther Martin's letter only proves that he was doubly mistaken, since he speaks of the erasure of the clause "to emit bills" as the denial of such power to Congress, when events have proven that he was mistaken.

Of contemporary opinions as to this point, the one of Hamilton, expressed in 1790, December 13th, as Secretary of the Treasury, in a letter to the House of Representatives, is important. He says: "The emitting of paper money by authority of the government is wisely prohibited to the individual states by the national constitution; and the spirit of that prohibition ought not to be disregarded by the Government of the United States." Here in the very act of opposing the exercise of the power, he conceded its existence. He virtually admits the authority of Congress to do what he thinks they ought not to do as a matter of policy.¹

The appeal is also made to the opinion of commentators and jurist and statesmen from the beginning of the Government down to the present.

Marshall is first appealed to.* The court in the last decision shows however pretty plainly that Marshall's opinions contain nothing adverse to the power of Congress to issue legal-tender notes. Even in the case of the Articles of Confederation, which said explicitly that all powers not expressly delegated to the United States were retained by the states, Marshall was not willing to say that they did not confer the right to make the notes a legal-tender. He spoke very guardedly, saying simply that Congress did not, as a matter of fact, make the notes a legal-tender; "perhaps," he adds, "they could not do so," and as if giving a ground for this opinion, he remarks further, that this power resided in the states. But even this

¹"Contemporary construction can never abrogate the text; it can never fritter away its obvious sense; it can never narrow down its true limitations; it can never enlarge its natural boundaries." (Story in Const. § 407)

reason, which was seemingly the only one which occurred to the judge for his opinion does not of course exist under our present constitution, by which this power is expressly prohibited to the states.

Webster's opinion is also quoted and made very much of. It is exceedingly interesting to study Webster's opinion on this topic, for it serves to show several important points in regard to the subject. The opinion commonly quoted is an expression used by him in a debate with Benton, in which Benton twitted him with being willing to abolish the money of the constitution, etc. It was not at all necessary for him in that connection to join issue with Benton on the general question, and like a skillful debater, he granted whatever was not necessary to his argument. We have, however, luckily, a formal opinion prepared by him on this very topic shortly afterward, by which he declared he was willing to stand or fall, as expressing his most matured convictions on this important topic.

He laid down four propositions, as follows :

1. The coinage power includes the power to maintain along with the coin a paper currency.
2. Congress has power to emit bills of credit.
3. The power to regulate commerce carries with it the power to provide a paper currency for the whole country.
4. The power of Congress to emit bills of credit is derived from the prohibition on the states. These were all sub-propositions in support of a main proposition that it was the duty of Congress to provide such a currency for the country. The logical inference from these propositions, in regard to the power of Congress over the legal-tender, were first drawn in

the case of Jiullard vs. Greenman, in the year 1884.

Story is also quoted. From his commentaries doubtless, for as a judge on the bench in the same year as Webster announced his mature convictions, viz.: 1837, in the case of Briscoe vs. the Bank. (11 Peters, 348) he supported Webster's views, at least so far as related to the power of Congress over a paper as well as a coin currency.

Thirty-three years later, in the celebrated case of Veazie Bank vs. Feno, the court held the soundness of Webster's views, and practically approved his first three propositions.

Fourteen years later the court again finds the question before it in a more advanced state, viz.: Can Congress impart a legal-tender character to the currency which it is thus enabled to provide? And almost unanimously the court decides that such currency, being as before decided a constitutional currency, Congress might give to it any legal character which properly belongs to currency as such, it not being prohibited by the constitution.

So much for what may be called the negative argument. It seems to me plain that the case of those who maintain that Congress has exceeded its power, in making paper money legal-tender, is not and can not be made out. In other words that, to use the expression of the court, they have not "succeeded in demonstrating clearly and beyond question that such power is forbidden by the constitution or not conferred." It can scarcely be said, even at the most, that they do more than raise a doubt in regard to the matter, and this as we have seen, is not sufficient. There are various corroborative arguments which I must pass over.

On the other hand there is a positive argument in favor of the view that the constitution confers this power on Congress, which should not be overlooked. It is evident from a consideration of the constitution as a whole, that the constitution does confer all the power in regard to the currency which is conferred on any element in our system. If sovereignty in regard to the currency is not conferred on Congress, then it has certainly not been conferred at all. Now, if we follow out the precedents already given us by the early interpreters of the constitution, and confirmed by the decisions of many a later one in construing the constitution, we shall have no difficulty, I think, in showing pretty clearly that this power was actually conferred, and that Congress was actually right in so considering it.

In the first place, in order to ascertain the meaning of constitutional phrases. we are compelled to examine the history of cotemporaries, and particularly that of the English nation. The constitution is filled with phrases which are absolutely unintelligible except as they are explained by the course of history. In construing such an instrument as the constitution, we may expect to find, says Mr. McMurtrie, terms which had been used as embodying royal or imperial prerogatives. In conferring or limiting powers in the constitution, no words were used which were unfamiliar to English ears. Almost every term was a word of art, the meaning of which could be ascertained only by reference to what it meant in the development of English political and private law. Consider the terms law and equity, bills of attainder, *habeas corpus*, freedom of the press and of speech and many others. The only way to ascertain the meaning of these terms

is to go to English law; outside of that they have no meaning at all. Take, moreover, such grants as that making the President commander-in-chief of the army and navy. How is it possible to find out how much was granted under this phrase, except by having regard to what it meant in English law and in the customs and habits of civilized Europe. Our ancestors were a hard-headed practical race, which used these terms in well defined meanings, or at least regarded as a matter of course, that the meaning was to be ascertained in a regularly defined method.¹

Now it is a conclusion borne out by all the decisions of our courts, that the meaning of such grants as were given, the meaning of terms used in them, etc., was to be found by references to the custom and habits of other civilized nations. If sovereignty over any matter is committed to the national government, then the content of that form of sovereignty is to be determined by reference to what it contained in other civilized nations, and especially in England. Even Mr. Field, who dissented from the last decision of the court in the legal-tender case, on the ground that there could be no incidental powers of sovereignty in the case of a limited government, at the same term of court held, in the case of U. S. vs. Jones, 109 U. S.

¹As Cooley puts it:

It must not be forgotten, in construing our constitutions, that in many particulars they are not the legitimate successes of the great charters of English liberty, whose provisions declaratory of the rights of the subject have acquired a well understood meaning, which the people must be supposed to have had in view in adopting them. We cannot understand these provisions unless we understand their history, and when we find them expressed in technical words and words of art, we must suppose these words to be employed in their technical sense.

513, that the right of eminent domain was an incident of sovereignty. In a word, it seems that the position of the court in the last case is absolutely unassailable on principles of law or polities, that when a particular sovereign power is granted, the only mode of ascertaining how it may be exercised, i. e., what the grant meant to convey, is to inquire what was the usage among the civilized nations in respect of that power. And the right to the same usage then vests in the United States government, restrained only by restrictions imposed by that instrument itself.

The only question then which we have before us is, what the right "to coin money" meant at that time. This, fortunately, we can ascertain easily from the literature and practice on the subject to be found in England and on the continent at that time. It is pretty well proven that the right to coin money or right of coinage was a general phrase in common use at the time, and for a long time before the Revolution, to designate sovereign power in regard to the currency. It was used as an ordinary means of indicating that certain princes had the complete sovereignty in regard to the circulating medium: and that this included, as a matter of law and fact, the right to declare anything the government pleased to be a legal tender, is evident from the financial history of every European country.

To put it in a nut shell then, the right to coin money meant sovereign power over the currency, (as it was used at the time) and this power was conferred on the general government, and it carried with it in the absence of restrictions the same sweeping power which other sovereignties had at the time.

It is held by some that "money," under the consti-

tution, means only coined money, i. e., gold and silver coins. Now Justice Field says in his dissenting opinion in the last legal-tender case, that it is a settled rule of interpretation that ‘the same term occurring in different parts of the same instrument shall be taken in the same sense, unless there be something in the context indicating that a different meaning be intended.’’ Now if this be true it overthrows his case, since it is evident that “money,” in the clause “no money shall be drawn from the treasury except in consequence of appropriations to be made by law,” includes treasury notes, greenbacks, national bank notes, etc., etc., in which case, on Field’s theory, “money,” in the phrase *to coin money*, would also include all these varieties of notes.

This is not the argument which the court in its last decision advances in support of its views, though it refers to it as entitled to consideration. The power to make a paper currency was subsumed by the court under the power to borrow money. Under the power to borrow money on the credit of the United States, and to issue circulating notes for the money borrowed, its power to define the quality and force of these notes as currency is as broad as the like power over a metallic currency under the power to coin money and regulate the value thereof.

The actual decision of the court deserves to be quoted in full : The Congress, as the legislature of a sovereign nation, being expressly empowered by the constitution to lay and collect taxes to pay the debt and provide for the common defence and general welfare of the United States, and to borrow money on the credit of the United States, and to coin money and regulate the value thereof, and of foreign coin, and

being clearly authorized as incidental to the exercise of those great powers to emit bills of credit, to charter national banks, and to provide a national currency for the whole people, in the form of coin, treasury notes and national bank bills, (all of which let it be noticed is admitted now to be constitutional doctrine), and the power to make the notes of the government a legal tender in payment of private debts being one of the powers belonging to sovereignty in other civilized nations, and not expressly withheld from Congress by the constitution, we are irresistibly impelled to the conclusion that the impressing upon the treasury notes of the United States the quality of being a legal tender in payment of private debts, is an appropriate means conducive and plainly adapted to the execution of the undoubted powers of Congress consistent with the letter and spirit of the constitution, and therefore within the meaning of that instrument necessary and proper for carrying into effect the powers vested by this constitution in the government of the United States. Such being our conclusion in matter of law, the question of expediency is not for us to decide, they add in effect.

It is not perfectly clear from this passage exactly on what ground they place their decision, but that can be ascertained from other portions of the opinion. It is evident, however, from a reading of the opinion of the court, that the interpretation which Mr. Bancroft and Mr. Justice Field himself put upon the words of the court are not justifiable, when they would make the court appear to say that the Government of the United States has all the sovereign powers which other governments enjoy, and which are not expressly prohibited to it. Since the court

explicitly says that it is a government of limited powers, only that when the constitution gives to it sovereign powers in any matter, as for instance, borrowing money, and does not accompany it with restrictions as to the method of exercising it, it has all the rights of other similar governments at the time of the adoption of the constitution. And this is the doctrine of every court since the days of Marshall on every similar question which has come before it.

I cannot resist the conviction that the result of this long discussion in the Supreme Court foreshadows the ultimate decision of more and more of our constitutional students until it will be as generally accepted to be sound constitutional law, as is the decision of the court that the government has the power "to emit bills" under the constitution. A progress from a minority in 1869 to a majority of one in 1870, for the constitutionality, and to an almost unanimous opinion (eight votes being in favor and only one against) fourteen years later, properly forecasts, I believe, public opinion outside since, as a matter of law, it is bound to prevail in the long run.

The arguments against this cumulative proof that the constitution vests this power in the Federal government, all prove too much, and if pursued to their logical conclusions, they would result in over-turning some of the most widely acknowledged views of the Supreme Court.

As to its effects on the political development of the country, I think personally that it will be good. It is desirable that somewhere in the body politic should be placed the full and complete power over the legal-tender. On this topic the words of Alexander Ham-

ilton on a similar subject commend themselves to me. In No. 34 of the *Federalist* he says :

"In pursuing this inquiry we must bear in mind that we are not to confine our view to the present period, but to look forward to remote futurity. Constitutions of civil governments are not to be framed on a calculation of existing exigencies; but upon a combination of these with the probable exigencies of ages according to the natural and tried course of human affairs. Nothing, therefore, can be more fallacious than to infer the extent of any power proper to be lodged in the National government, from an estimate of its immediate necessities. There ought to be a capacity to provide for future contingencies as they may happen, and as these are illimitable in their nature, so it is impossible safely to limit that capacity."

The time may come, as it has already been here, when it may be desirable to alter the legal-tender. To deny this power to the Federal government is to deny it to any part of our legislative power : requiring an amendment to the constitution before any change could be made. The objection that if such a power exists it is liable to abuse, has of course much force, but it proves too much since it might be urged in regard to nearly all other powers. If circumstances should ever again arise under which the government should find itself obliged to have recourse to the use of this power, we may be sure it would be resorted to (constitutional amendment or no amendment) and the evil result attending a breach of the constitution would be manifold more than any evil results likely to arise owing to the exercise of the acknowledged power. Moreover, we now see that we must rely on the education of the people in sound doctrines in order to protect us against the evils of the exercise of such a power, instead of on the more or less weak bulwarks of constitutional prohibition, and I, for one, believe in the light of our financial history for the last twenty years, that we are safe in assuming that the people can be trusted in the future as in the past

to maintain a sound currency under all conditions, except possibly those where circumstances would compel a resort to such an evil instrument as an excessive paper currency—no matter what might stand in the constitution.

Whatever one may think of this, however, whatever his views upon the expediency or folly of giving to Congress the power of issuing paper currency, I feel sure that the oftener he considers the question from the only proper point of view, viz.: the legal or constitutional one—the more irresistible will be the conviction that the court, in this last case, has finally given us a decision which will stand the test of time, because, in full harmony with the great principles of constitutional interpretation which were laid down by our early jurists, were followed by all later courts, and have been accepted by the people as fundamental to our political system.

NOTE.

The authorities specially consulted in preparing this paper, aside from the argument before the courts and the opinions of the courts themselves, are the following:

- (1.) Mr. Bancroft's "Plea for the Constitution;"
- (2.) Mr. McMurtrie's "Observations on Mr. Bancroft's Plea;"
- (3.) Articles in Law Magazines, (a) H. H. Neill in *Columbia Jurist*, Vol. II, No. 1; (b) D. H. Chamberlain in *American Law Review*, April 1884; (c) T. H. Talbot in *American Law Review*, Vol. XVIII, p. 618;
- (d) Prof. Thayer in *Harvard Law Review*, Vol. I;
- (4.) Elliot's *Debates*, and similar sources.

Statements of arguments have been taken in some cases almost *verbatim et literatim* from one or another of the above sources.

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CAPITAL
AND ITS EARNINGS.

BY

JOHN B. CLARK, A. M.,

PROFESSOR OF HISTORY AND POLITICAL SCIENCE,
SMITH COLLEGE.

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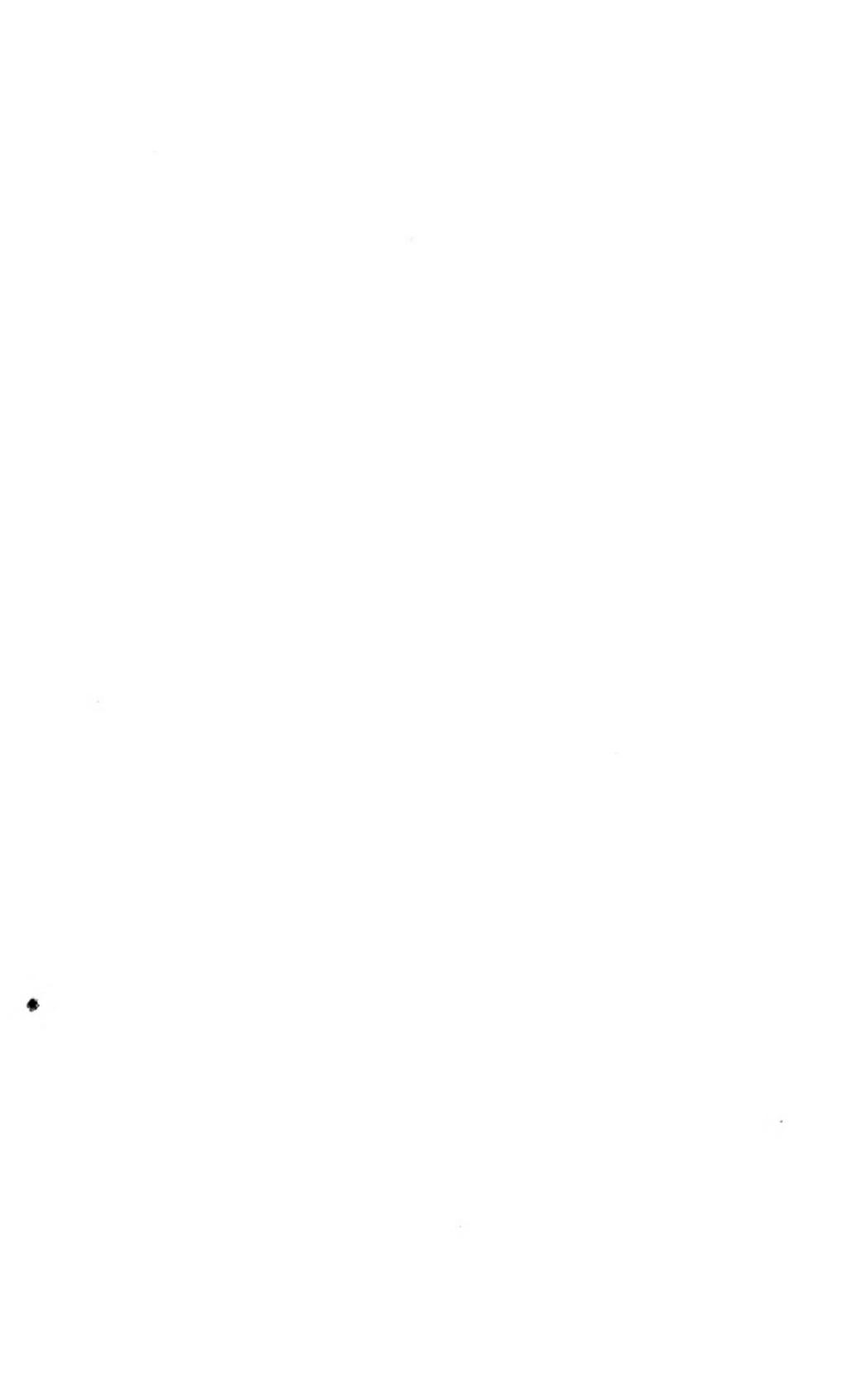
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PREFATORY NOTE.

This essay is a prospectus and somewhat more. It serves to indicate the scope and character of a fuller discussion that, if present plans are executed, will in due time follow it. It anticipates to some extent the work of that discussion, and is issued to avoid delay in bringing before the minds of students of economics certain principles not yet recognized, but seemingly obvious enough to win assent, even though briefly presented. It may be found that these principles settle questions of agrarian socialism, and carry the study of the general wage problem to a point where a solution of it will be more nearly possible than it has been. The practical fruit of the discussion will appear in the latter part of it, and may perhaps compensate the reader for being detained for a time in a region of abstract thought.

J. B. CLARK.

NORTHAMPTON, MASS.



CAPITAL AND ITS EARNINGS.

THE NATURE OF CAPITAL.

In the language of business the word capital stands for a single, clear conception; in the language of economic science it stands for two unlike conceptions, and is unconsciously applied now to the one and now to the other. Scientific analysis has been baffled by this fact, and many logomachies have been occasioned by it. Socialism draws its intellectual supplies from a vitiated pool the disturbing element of which is this shifting conception of capital.

Ask a manufacturer, "What is your capital?" and he will probably express his answer in dollars. Ask him, "*In* what is your capital invested?" and he will specify the buildings, machines, land, materials, etc., in which his productive fund now chances to be embodied. These concrete things will figure in his thought as the containers of his capital; while the content itself will appear to him to be a value, an abstract quantum of wealth. He will think of it as a fund that is permanently his, though it may not retain for a single day its exact present form of embodiment. The visible objects in his possession will, one after another, depart from him: but his

capital will remain. Materials will become finished products and disappear in the market, and new materials will take their places. Machines will wear out, and new ones will be obtained. Even buildings will be renewed by gradual decay and restoration; but through all transmutations of its outward form, the fund of capital itself will continue as a permanent fact. If there are a half-million of dollars invested in the business to-day, there will be that amount or more, unless disaster intervenes, twenty years hence; but of the objects that now embody that value but few will then remain. Capital is, in this view, an abstract fund, the destiny of which is to migrate through an endless series of outward forms.

Take an inventory of a hardware merchant's stock. Make a complete list of saws, hatchets, nails, etc., that his shelves and store-rooms contain. Have you determined what is his capital? Not, according to his own view, until you have attached to each article on the list the figure that represents its market value, and added the figures into a sum total. Then you will have something that is permanently his, something that he put into the business and can probably get out of it. Take another inventory a year hence. Most of the goods that appeared on the former list will have departed, and new ones will be in their places; but if the new figures on the list represent the same value as before, the capital is intact. If the original goods had not departed, the fund would have been seriously impaired. The corn or wheat that perishes abides. The goods that pass away in traffic leave behind them the value that, for economic purposes, may be regarded as a sort of vital essence. That value perishes by holding fast

to its material body, and lives by passing continually into new forms. Goods must be sold and others bought, tools must be worn out in creating products, or the fund that was invested in the business will dwindle and ultimately vanish.

The fund, capital, resides in many unlike things, but consists of a single entity that is common to them all. That entity is "effective social utility."¹ So much of this as a business man retains embodied in instruments of production constitutes his permanent capital, however the instruments may come and go in exchange, and however they may perish and be restored through use.

This abstract conception of capital is employed in business a hundred times where the concrete conception is employed once. For the purposes of a scientific study of modern problems it is the primary notion of capital. Yet it is possible to view this economic element in the concrete. It is often useful to consciously merge in thought containers and content, and to speak of buildings, machines, materials, etc., as constituting capital. The form of the productive fund is important; and in those problems that require a reference to it, it is entirely possible to speak of it without confusion. The actual practice of economic science has been to first define capital in the concrete, and then, in the problems connected

¹For the full significance of these terms I am obliged to refer the reader to the fifth chapter of my treatise entitled "The Philosophy of Wealth." The term "effective" excludes utilities that, like that of air, can be had in abundance without effort. It facilitates the discussion of questions concerning capital to have in mind a standard of value that does not make all measurements of it to depend on promiscuous comparisons between unlike things. Such a standard is offered in the chapter referred to.

with it, to tacitly substitute again and again the abstract conception. Capital is first said to consist of tools, buildings, materials, food, etc., and is then tacitly treated as a fund, as the result of saving from incomes, as the reservoir out of which come wages, the workingmen's share in the division of abstract wealth. Even recent and acute discussions shift continually from one conception to the other, with results that baffle honest inquiry and make heresy plausible. This practice has given a decided impulse to agrarianism and state socialism. Economic theory, whether recognized or not, is a main-spring of political action, and a faulty theory widely taught is sure to produce fruit in bad action.

At the cost of lingering in the region of abstract thought longer than, with practical questions before us, we might like to do, it is best that we fully determine the nature, functions and varieties of capital, and observe a few cases in which the wavering in thought between different conceptions of it has led to especial harm.

Capital in the concrete consists of commodities that aid production. It is instrumental wealth,—that which directly satisfies no natural wants, but helps men to obtain the things that satisfy them. Yet productive instruments directly appeal to desires of a certain kind, and the clearest line of separation between concrete capital and other forms of wealth is afforded by fixing the special nature of the desires which capital gratifies. They are derived desires. They result not from a natural craving but from reflection,—from reasoning on the connection between means and ends. Appetite for food engenders, through the intellect, a desire for the arrow that will

kill game, the ladder that will lift a man to fruit-bearing branches, etc. Capital may be defined as the wealth that affords gratification only in this indirect way. It is wealth in mediate utilization, and stands in contrast with that which has been termed "consumers' wealth," which is in direct utilization.

There are two opposite ways in which concrete capital aids production. Some things, like artizans' tools, help to fit for use the matter furnished by nature. They have an active rather than a passive function to perform. They impart utilities to other things. Machines that transform matter, vehicles that move it, buildings that protect it, come in this category; and so do all appliances that, in the war between man and nature, range themselves on the side of man and help him to subjugate resisting elements to his use. These instruments constitute the active variety of concrete capital.

The materials on which implements work are mechanically passive. They receive utilities instead of imparting them: they undergo modifications, and themselves modify nothing. In the contest between man and nature they range themselves on the side of nature, and maintain a recipient attitude towards man and his active appliances. Cotton is thus passive, while the spindle is active; bar iron is passive, while the roll and the hammer are active; and throughout the field of industry the character of the process itself draws a line of demarkation between active instruments and passive materials, between man's weapons of offense and nature's elements of defense.

The passive forms of concrete capital include not merely the crude matter with which industry begins,

but the products that pass in an unfinished state from one working group to another. It includes not only ore but iron, not only wool but yarn, cloth, and even ready-made garments awaiting purchasers. It includes the stocks of merchandise that, in the hands of dealers, are awaiting the minor utilities of form, place, etc., that are necessary in order to make them entirely ready for final consumption.¹

This distinction underlies the one usually made between so-called "fixed" and "circulating" capital. Instruments that are rated as fixed capital,—buildings, tools, etc.,—have active industrial functions to perform: while those which are rated as circulating capital have passive ones. Practical thought, however, applies the terms fixed and circulating to capital in the abstract rather than in the concrete; and here again common usage bears the test of careful analysis. Concrete things do not circulate in any true sense. The division of labor causes them, in the making, to pass through a series of hands: but when finished they go into the possession of users and remain there. There is, however, something that truly circulates: pure capital passes through an endless series of outward forms. We have called it a permanent fund, and it is so: but it perpetuates itself only by passing continually out of one body into another. It lives by transmigration.

Pure capital stays longer in some forms than in others. It remains for an instant in steam, and for an hour in the fuel that generates it. It stays for

¹It is worthy of notice that the raw materials that enter into a tool make a transition from one variety of concrete capital to the other. The steel that is passive in a bar becomes active in a hammer. At any particular time it is easy to see on which side of the line a thing belongs.

weeks in unfinished products, for years in the machines that make them, and for decades in the buildings that house them. How long may it remain in the land under the buildings? Here, indeed, is an exception to the rule of endless wandering. Pure capital that vests itself in land is at liberty to stay there indefinitely.

The value that a business man invests in the passive forms of concrete capital should, for good results, remain there only briefly. Profits are greater the more quickly raw materials are transformed, sold, and replaced by others. If the capital that is to-day embodied in unfinished goods is in those same goods a few months hence, it indicates trouble on either the mechanical or the commercial side. The commodities have been either too long in finishing or too long in selling; and in either case the owner suffers a reduction of his gains. His capital ought to have been more quickly liberated from the present stock and invested in others. The fund that earns a profit by deserting one body and entering another is circulating capital. It inhabits only the passive instruments of industry.

The value that is embodied in an active instrument needs, for good results, to remain there as long as is practicable. Machines, buildings, etc., ought not to wear out and be replaced too quickly. They cannot, indeed, last for ever: sooner or later the value that is now in them will have left them and betaken itself to other things; but this results from an unpleasant necessity, and the owner postpones it as long as he can. The fund that earns its profit while remaining in the forms in which its owner invests it is fixed capital. Its tenure of its material dwelling is not,

indeed, absolutely fixed: nature will evict it by destroying the dwelling: but it will not of its own motion abandon it.

Although fixed capital generally retains its form of investment much longer than circulating, the mere duration of the tenure does not always distinguish between them. Some active instruments, such as emery, oil and fuel, are highly perishable, while some passive instruments are held in storage for considerable periods. The essential point of difference lies, as stated, in the fact that it is profitable for circulating capital to pass from one form to another, while it is profitable for fixed capital to retain its form of investment till, through the wear of the instrument, it is forced to leave it.

If fixed capital can find a productive instrument that is not destroyed in the using, it will naturally remain in it if once so invested. Such an instrument is land in the special economic sense of the term. Whatever a producer invests in land may remain there as long as his industry continues. While circulating capital moves from form to form rapidly and eagerly, and while most of the fixed capital migrates slowly and under compulsion, there is a part of this latter fund that migrates not at all. Capital, then, in the abstract sense of the term, is to be classified as circulating or fixed: but in one case only is the fixity permanent.¹

¹Land is not invariably an active instrument of production; and in the cases in which it is passive it contains circulating capital. A dealer in real estate may buy a tract of land in the suburbs of a city, divide it, and sell it for building lots. A fund used for this purpose is circulating capital; and so is all the wealth that is speculatively invested in land that is to be held for a time and then sold for the sake of securing the rise in its value.

THE ORIGIN OF CAPITAL.

We may now unravel a few entanglements occasioned by a wavering in scientific thought between the abstract and the concrete conceptions of capital. In immediate connection with definitions of capital that make it to "consist of buildings, tools, raw materials, etc., " it is customary to say that it originates in "abstinence" on the part of the owners. Here is, perhaps, the earliest unconscious lapse into the abstract use of the term. Is abstinence practiced on concrete things? Does the owner of a mill refrain from using it when it is ready? Does he store materials and hold machinery in idleness? Would it be meritorious or profitable for him to do so? He has, in fact, practiced abstinence; but it has been in reference only to abstract wealth. Having at his disposal a certain available fund, he refrained from vesting it in the luxurious forms in which it would give immediate enjoyment, but must perish in the process; he vested it in forms in which it may itself last forever, while at the same time aiding in the creation of other wealth. The abstinence in question consists solely in the diversion of an abstract fund of wealth from one mode of investment to another. It has, however, the effect of saving the fund itself from destruction.

But, does capital ever thus continue? Is it not all consumed in the using, as Mr. Mill and others have said? Do not machines wear out, buildings fall to pieces, and materials merge themselves in products? Certainly; but here is another naïve transition of thought and speech from one conception of capital to the other. It is the concrete forms of capital that perish in the using. The industrial instruments that

embody capital vanish like consumers' wealth. Throw coal under the boiler of a mill and it will pass off in smoke and heat, like the coals in a fire-place; but the fuel burned in the dwelling spends its energy on the person of its owner, while that burned in the mill merges itself in the products that it helps to create. All of its available utility finds its way along the belts, pulleys and shafting to the threads upon the spindles and the web upon the looms. The effective utility of the commodities that constitute consumers' wealth perishes with them, while that of concrete capital is, in successful industry, perpetual. To capitalize, then, is, as already indicated, to rescue an abstract fund of wealth from destruction; it is to save, in a literal sense: but it is to cause the concrete things that at first embody the fund to pass out of existence. The more the machine is worked the greater is its wear, and the larger are its earnings. The bodily tissue of capital lives by destruction and replacement; the utility that is the vital essence of it is, in successful industry, perpetual.

THE INDUSTRIAL FUNCTION OF CAPITAL.

Is capital, as the theories say, "a fund for the maintenance of labor?" Does it seek, as its natural and primary forms of investment, food and comforts of low grade? It is clear that such things are incapable of what we have termed secondary utilization. They minister to the direct wants of men, and the value that resides in them perishes with them in the using. It has none of the marks of pure capital, but lies on the other side of the boundary that separates instrumental wealth from consumers' wealth. Commodities in full readiness to be used by laboring

men have nevertheless been treated as the typical forms of capital.

If the workman were an engine, the fuel that feeds him and the wrappings that protect him should be rated as instrumental wealth; and a tendency to study economic activities from an employer's point of view leads naturally to such a classification. Wealth invested in food that feeds a laborer may, from this point of view, be said to reappear in the product of his efforts, precisely as does the wealth that is invested in fuel for the engine. From the workman's own point of view such a treatment is an absurdity. To him food does not seem to be consumed, nor clothing to be worn, nor simple luxuries to be enjoyed, for any ulterior purpose. The effect of such consumption on his own sensibilities is ultimate. Laboring humanity is all humanity, with a few exceptions; and the workman's view is the distinctively human view of capital and its action. That which never fails to distinguish it is its indirect relation to man and his gratifications. Whatever satisfies a direct natural craving is not capital but consumers' wealth. Moreover, the treatment that calls capital primarily means of subsistence for laborers is a survival of the Wage Fund theory, a doctrine that, in its entirety, has long ago gone the way of exploded fallacies, even though now and then some writer of ability infuses a galvanic life into some part of it. Just now this entire doctrine is enjoying a probation after death, and it may be well to incidentally raise the question whether wages can, in successful industry, be paid from capital. The question is, in fact, settled in the asking, if we simply attach in succession to the term capital the

two distinct meanings that the word conveys. Using one meaning we get a negative answer; using the other we get a qualifiedly affirmative one; and if we choose to shift from one meaning to the other we get what much discussion has in fact yielded—confusion only.

Do wages, considered as a value, a share in the distribution of social income, come out of a fund of pure capital accumulated in advance? Clearly not. The value that is made over to the workmen on Saturday night has come into existence during the week. It is the economic product of the industry in which they are engaged. Are the men in question weavers? The fund that is to pay them grows as the looms work and the web lengthens. Are they masons? Their particular wage fund is embodying itself in the courses of brick or stone that are appearing on the wall. Industry first creates value, and a part of that value rewards the labor engaged in it. Wages, regarded as a mere *quantum* of wealth, come from no fund provided in advance.

Do concrete wages come out of concrete capital that was in existence before the work began? Is the bread that a man eats, and the coat that he wears after his week's work is over, taken from an antecedent store? The fact on this point is equally clear. The goods purchased on Saturday night were partly finished a week before; most of them were, in the economic sense, completed during the very interval of labor that Saturday's wages cover. While the men were earning their money wages in the mill others were giving the finishing touches to the things that they buy on pay-day. Those things were, however, partly made before. The wheat has lain in the

elevators, and the flour in the bakeries. The wool, the cloth, and the finished garments have lain here and there in store. This fore-handedness is necessary, not in order that wages may be paid, but in order that they may be promptly and conveniently invested. The goods thus provided constitute not a wage paying fund, but an exchanging stock; and it is the confounding of these different things that has made trouble with wage theories.

If labor is to be employed and paid, that which is first necessary is a true wage fund, a value to be brought into existence by the industry itself. When the men are hired this value is prospective; when they are paid it is newly created. That which is secondly necessary is a concrete exchanging stock, a mass of commodities begun in advance of the labor that is to be rewarded by them, but to be completed while that labor is in progress.

How much, then, have we gained by this analysis? A new nomenclature? Is something now termed an exchanging stock to do the work of the former wage fund? Is it as necessary as it was ever supposed to be to accumulate capital in advance, if wage-working is to proceed? Does the part of the exchanging stock that is accumulated in advance set the same limit upon the rate of wages, or the number of workers, that the wage fund was supposed to set? We shall be able to answer to all these inquiries an emphatic "no." The exchanging stock stands in no such quantitative relation to wages. A reduction of it would not lessen them nor curtail work as standard writers have tried to prove. The true wage fund, the value created by the week's industry, *must* be large enough to contain the week's wages, or work

will soon be checked. The pre-existing mercantile stocks *are* in practice large enough to contain them several times over, but they need not be large enough to contain them once. In fact, the finished commodities on hand at the beginning of the week might be so reduced as to equal in value only a quarter of the wages to be paid at the end of that interval, and yet labor might be employed and paid much as is done at present. We may go farther, and allow for the completing of unfinished commodities during the week itself. We may safely say that if the mercantile stocks in the possession of an entire community at the beginning of a week of labor were of such a size, and were in such a state of advancement, that by the end of that interval enough commodities would be completed to cover a quarter of the wages that would then be due to workmen, labor might be employed and paid as it is under present conditions. Reduce mercantile stocks to a twentieth of their present size, and though you would disarrange industry by the sudden transition, you would impose no such mathematical limit upon wages as traditional theories suppose.

Pure wages do not come out of the exchanging stock; they simply seek investment in it. The vast actual extent of this stock is a convenience, not a necessity. It makes labor attractive, by offering a varied assortment of tempting articles in which its returns may be invested. The stock must indeed be large enough to afford either a week's supply of ready food, or the means of getting it during the interval. When famine conditions should be reached, when so much of present accumulations should have been sunk in the sea that crude nutriment for the com-

munity could no longer be had, then the exchanging stock might begin to do the work that, under the name of a wage fund, it has been supposed to do. It might set the limits of work and wages that are mathematically possible.

We here take issue with that large remainder of the Wage Fund theory that expresses itself in the statement that "demand for commodities is not a demand for labor." This proposition has been supposed to contradict the off-hand verdict of common sense; but it has also been supposed to rest on the higher ground of an intricate scientific analysis. It will, in fact, bear the test of a clear analysis as little as it will that of a popular judgment.

The awkwardly worded statement that "demand for commodities is not a demand for labor" is intended to mean that men might arrive in a civilized community ready to disburse large incomes in luxurious living, and their demand for articles of consumption would set in motion no wheels, it would call into the mills no idlers from the street, because, forsooth, that demand would furnish no capital with which to advance the necessary wages. In the illustration that Mr. Mill has rendered classical, a landed proprietor, the wealthy builder of artificial lakes, might resolve to devote the whole income heretofore spent in this way, to the purchase of velvet, and his demand would add no workmen to the forces now in the velvet shops, for the reason that it would, of itself, furnish no capital with which to advance the wages of the new men. It is a marked commentary on the present state of deductive economics that the plausible reasoning that sustains this proposition should be rated among its triumphs.

What will actually happen in the case of this lake builder? What will result if he and others of his class suddenly cease investing their incomes in ponds and aqueducts, and begin to spend them for articles of luxury? We may make the case unnaturally favorable to the old theory by supposing that the land-owners publish in January their intention of diverting rents that will accrue in April to a specified list of commodities. That prospective demand will create an instant demand for the labor that can satisfy it. Silk-makers, velvet-makers, carriage-makers, wine-growers, etc., will make immediate additions to their working forces. Every day's labor on the part of the new men will create a value. It may be represented for a time by very unmarketable goods; by carriage materials in the rough, by silk cocoons, and by newly planted vineyards; but this value, even while thus embodied, will find the means of conveying itself to the workmen, and from them to the venders of provisions, clothing, etc. There will, indeed, be a new inroad made upon the stocks of these venders. For a brief season their supplies of merchandise will be less ample than they average, and purchasers will find the assortment presented for their selection less adequate during the interval to satisfy their varied tastes; but that involves nothing more serious than an occasional case in which some one may not get the precise article that he desires, and may have to make the best of a substitute. Wage-working, wage-paying, and wage-spending will be possible and actual from the time when the future demand for articles of luxury becomes an established fact. It is not only true that demand for commodities is a demand for labor, but it is true

that a known future demand for articles of any kind is, in actual conditions, a present demand for labor.¹

A true wage fund, consisting of value created by the industry itself, a fund that comes into existence in adequate quantity during every hour in which successful work proceeds, is the one indispensable requisite of wage-paying. This fund must be large enough to contain the wages paid. It is liable, in particular cases, to fall short of that amount, and workmen are then discharged; they are sent away because the business that has employed them has ceased to be profitable.

An exchanging stock, a quantity of commodities accumulated partly in advance, is the condition of convenient wage-spending. Stocks, such as those that exist in civilized communities, would bear an indefinite reduction before any necessary curtailment of wages would take place. With a pure fund of value constantly created by industry, and with even a small stock of merchandise for exchange, labor will be able to earn its reward, to receive it, and to spend it.²

¹If we do not suppose that the land-owners publish in advance their intention of spending future rents on articles of luxury, we have a more natural case. If they wait to receive the April rents, and then make a sudden inroad upon the stocks of dealers in velvet and other luxuries, the reduction of those stocks below their average standard, as to amount and variety, would take place directly, and additional laborers would be hired during the following quarter. Some of these would be needed for the replacing of the goods suddenly taken from the existing stocks. These can be paid, according to any theory, from the proceeds of the unusual sale. Others are needed in order to meet the permanent increase in the demand for similar goods; and these will draw their true wages from the value that their industry creates from day to day.

²In a fuller discussion it would be in order to show by what mechanism value embodied in unfinished goods can be conveyed to

THE EARNINGS OF CAPITAL.

Interest is the name of the earnings of pure capital. It is expressed relatively, as a percentage of the amount of productive wealth that secures it. It has no reference to the form in which the capital is invested; a thousand dollars per annum is interest on twenty thousand, whether that larger sum be, for the moment, invested in ships, farms or merchandise.

There is need of a term that shall designate, in the same comprehensive way, the earnings of concrete capital. It should correspond to interest both in detail and in general. As interest expresses the earnings of the abstract sum that is invested in any concrete instrument of production, so the corresponding term should express, in an independent sum, the

laborers in such a shape that they can use it in purchasing commodities. This would require some explanation of the action of currency and banks. It is not necessary in this connection to invoke the aid of a loan fund, a quantity of otherwise idle capital held in readiness for such contingencies. If such a fund were a necessity, the older economists would be right in maintaining that demand for commodities is not, without the intervention of an antecedent store of capital, a demand for labor. They would be wrong in supposing that, in actual society, such a demand could spring up without calling new labor into immediate employment, since a great loan fund is one of the facts with which positive economics has to deal. They probably did not, in reality, take a sufficient account of it, and they have expressed themselves as though a new demand for commodities might, in practice, spring up and the needed workmen might still remain idle. The extent of the actual loan fund makes this whole question theoretical: but in that shape it has important bearings on the labor problem and on socialism. Let us therefore suppose that the employers in the ideal case above referred to, on becoming conscious of the increased demand for their products, hire new men and pay them in value certificates, conveying a title of ownership to partly finished products. Let us suppose that these certificates are redeemable in

earnings of the instrument itself. As interest in general designates the total earnings of the social fund of productive wealth, so the parallel term should designate the sum total of the particular amounts earned by all of the concrete instruments that embody that fund.

If we allow ourselves, here, as elsewhere to be guided by the subtle discriminations that are at the basis of practical speech, we shall find that rent is precisely the term that we are seeking. When freed from the limitations imposed by an arbitrary scientific definition the word insists on including in its meaning the returns of all the concrete things in which pure capital embodies itself. It is instinctive with farmers to speak of the rent of wagons, horses,

money at the expiration of an interval of production, and that the credit of the employers is good. If exchanging stocks are ample, dealers will accept these certificates and deliver to the new workmen the needed supplies. If the stocks are, by an extreme supposition, inadequate for this purpose, workmen will keep some of the certificates until the expiration of the interval. "That," it may be said, "will make the workmen capitalists." In a sense it will do so, but in a manner that illustrates the main point for which we here contend. The capital that the workmen thus possess was not in existence before they began to work. It has been created by the industry in which they are employed, and during the pending interval.

The view here advocated differs from the traditional one in one point of logic and in two points of fact. Wages must be regarded as paid when value in any form is made over to workmen. The question then remaining is one of investment. A loan fund actually exists so large as, even if the traditional doctrine were true, to preclude the possibility of a demand for commodities without a demand for labor. The loan fund is not, however, necessary. Exchanging stocks exist that are more than adequate to furnish forms of investment for new wages. A demand for commodities that does not immediately call the corresponding labor into employment is by two removes distant from actual possibility.

and reaping machines, as well as land: it is instinctive with manufacturers to speak of the rent of mills, machines, canals, and reservoirs, as well as mill sites.¹

The ground of this usage will bear the closest analysis, for the distinction between pure capital and the concrete things that embody it is primary, while that between land and other instruments is secondary. The law of rent, which it has been customary to apply to land, applies equally well to all the material commodities that aid man in production; while, on the other hand, the law of interest, which it has been customary to vaguely apply to capital in other forms than that of land, may and should be consistently applied to pure capital invested in any-

¹It is less common to designate as rent the returns of a productive instrument that is used by its owner than it is to so designate the hire paid to an owner by another user; but it is also less common to speak of interest earned by pure capital in the hands of its owner than to speak of the interest paid to him by a borrower. The fact of borrowing the "money," or hiring the instrument, has the effect of clearly separating, from the owner's point of view, the earnings of the fund or the instrument from other parts of his income. When they are in his own hands they are merged with wages, and are less easily distinguished. In extending the meaning of rent as well as that of interest to include the earnings of capital employed by its owner, we only make popular speech consistent with its own finer discriminations.

That only the active forms of concrete capital are commonly spoken of as earning rent is due to the fact that they only can be borrowed and returned. To hire raw material and fully utilize it is to make it impossible to return to the owner exactly that material. It is necessary to return the value of it in another form. Borrowing raw material is borrowing the value that is embodied in it, a transaction in which pure capital, rather than its concrete vehicle, is the subject of transfer. When, however, the passive instruments of industry are retained in their owner's hands this difficulty disappears, and it becomes possible to regard as rent the actual earnings of any concrete form of capital.

thing, whether tools, ships, buildings, merchandise, or farms.

Rent, then, for the purposes of the present essay, is the amount earned by concrete productive instruments of any and every kind.¹ Farms, tools, buildings, ships and merchandise alike earn it. It is expressed in lump sums, not, like interest, in percentages. It has no direct reference to the value of the things that secure it. A thousand dollars earned by a farm, a building, a ship, or a car, constitute the rent of that farm, building, ship or car, whether the thing itself is worth ten thousand dollars or a hundred thousand. Whatever accrues to a man by reason of the fact that he owns an instrument of production is the rent of that instrument, irrespective of its value.

It has of late been somewhat customary to speak of "rent of personal ability." From a practical point of view this nomenclature seems anomalous; and it has a tendency to introduce an actual and serious anomaly into the scientific analysis of distribution. For the purposes of this discussion rent will be confined, as it is in the business world, to the sums earned by outward and material instruments of production.

The entire income resulting from the ownership of property is, thus, interest, when regarded in one way; it is rent, when regarded in another. Ascertain the total market value of all instruments of production, find what proportion of that amount these instruments annually earn for their owners, and you have the total income of the property holding class, as such, in the guise of interest. Make a list of the instruments themselves, and place opposite to the

name of each the sum that it annually earns: add these amounts, and you have the total income of the property-owning class, as such, in the guise of rent. In this connection practical thought makes no distinction between land and other material instruments that are let for hire, and neither should science do so. There are grounds on which land may demand a special treatment. That which needs to be most sharply distinguished is the material apparatus of the social workshop, on the one hand, and the value that is invested in it, on the other.

It is this fund of wealth, abstractly considered, that figures chiefly in questions of distribution. The whole income of society resolves itself into the reward of labor and that of capital. There is, indeed, an intermittent element of gain, apart from interest, accruing to a certain portion of social capital. This I have elsewhere termed "pure mercantile profit."¹ It is an ever appearing and ever vanishing sum, and is a special premium for mechanical invention and the perfecting of industrial organization. It accrues to that part of capital that, in opportune times and ways, is combined with labor. Competition tends to annihilate pure profit, and to cause wages and interest to absorb the entire gain from social industry.²

¹See *Political Science Quarterly* for December, 1877; also "*The Modern Distributive Process*,"—Ginn & Co.

²In an able discussion of this subject in the *Quarterly Journal of Economics* for January, 1888, Mr. Sidney Webb, of London University College, proposes to include the profits of business, apart from salaries of management, under the general term "economic interest." This is grouping under a single name commercial interest, which competitive law tends to preserve, and pure profit, which, as is here claimed, competitive law tends to destroy.

The current treatment of distribution resolves the income of society into rent, interest, wages, and *entrepreneur's profit*. Not one of these four elements is made to include the so-called unearned increment of land, or the value that attaches itself to the soil in consequence of social progress. Rent, as here defined, will be found to include this immense item of social gain; interest will also include it, and the entire income of society will thus resolve itself into the earnings of labor and those of capital.

The true rent of anything is the entire gain accruing to the owner of it, and must therefore take account of all changes in the value of the thing itself. It may grow more valuable or less so in the using. Buildings, machines, ships, etc., wear out, and the surface alluvium of the earth itself does so. If by social arrangements this loss falls on the owner of one of these instruments, he must, in order to know what is his true income from it, deduct from the sum paid by the user whatever may be necessary in order to restore it to its original condition. Where, by contract, the user assumes this loss, and undertakes to protect the owner by keeping the instrument in repair, he must deduct from the gross amount that it is worth to him the cost of thus preserving it. The sum then received by the owner is, in so far as this element is concerned, the true rent.¹

¹In the renting of buildings custom throws the loss by deterioration mainly on the owner, and the sum received by him is true rent, plus an indemnity for the injury to the property. In the renting of mines, forests and quarries the contract rent includes a large element of indemnity. In the renting of machinery the loss by wear is thrown on the user in so far as it is covered by the cost of repairs assumed by him. Such deterioration as is not prevented by repairs must be covered by an indemnity that is a part of the nom-

Some things acquire elements of value by time. One of Raphael's paintings would be worth to-day, to an enterprising exhibitor, far more than the artist could ever have gotten from it. Most land increases in value from year to year. If the true gains of the owner of a productive instrument are to be computed account must be taken of additions to the value of the instrument itself, as well as of deductions from it. Contract rent, as paid by a lessee, has no occasion to include this element of gain, and falls, by so much, short of the true rent.

Economic science has endeavored to make a sharp distinction between land, as given by nature, and improvements upon it made by labor. Utilities artificially imparted to a portion of the earth are, in this use of terms, capital, while the land itself is not so. We cannot here admit that a productive fund ceases to be capital when invested in land itself, any more than it does when invested in buildings, fences, drains or dykes. We may, however, class as auxiliary capital the sums spent in improving agricultural land.

Rent is currently said to be paid for the use of "original and indestructible properties" of the soil; and science has had to struggle against the natural meaning of these terms. There is a kind of fertility that is a prominent cause of rent, and that is also highly destructible. The food creating alluvium on the surface of the earth necessarily loses chemical
inal rent. In the renting of agricultural land custom in the older countries tends to throw most of the loss from deterioration on the user, and to make the contract rent in so far approximately the true rent. In the newer countries a large part of this loss falls on the owner, and the contract rent paid for the land includes the sum necessary to make good the injury that it suffers.

elements in imparting them to crops. The value residing in the loam of the American prairies is exported in the shape of wheat and flour. There comes, however, a time when soil exploitation is unprofitable, and when policy, enforced by contract, ensures that the nutritive elements taken from the soil by the cultivator shall be restored to it. The farmer undertakes to repair the food-creating instrument that lies in a thin stratum on the top of the really indestructible part of the earth, much as he would repair a reaping machine furnished by the landlord. The nutritive loam is thus constantly perishing and constantly replaced, and only by a decided stretch of language can it be termed indestructible. If a farmer bears the cost of keeping the superficial earth in good condition, what he pays to his landlord is a true rent minus the "unearned increment."

Location is an element that determines the rent of land; but it is location relative to a market. This can scarcely be termed an "original" property of land, though it is more nearly so than utilities directly imparted by labor, and the stretch of meaning in the case of this term is less serious than the former one.

Land is an aggregation of three kinds of utility. It has properties that man did not create and cannot destroy; it has others that mankind, by collective action, create; and still others that individuals impart by the direct labor of improvement. Rent is paid for utilities of the second and third kinds. Those qualities of the soil that are in the fullest sense original and indestructible, the qualities that would have existed if man had never been created, and that would continue in their present condition if the

human race were to perish, have, at present, no direct influence on rent.

Solidity and power to sustain artificial structures are qualities of land that result from geological causes. So also is that condition of the surface of the earth which permits inhabitants, animal and human, to stand upon it or travel over it. Capacity to hold a thin stratum of alluvium and expose it to the action of rain and sunlight comes in the same category. These properties man can neither impart to land nor take from it. They are original and indestructible; but they are too abundant to have present market value. They are a pre-requisite of rent, since, like air and sunlight, they are essential to animal and vegetable life, but they have no direct influence upon it.¹

A utility of land that is created by man is accessibility, or capacity to be easily reached from permanent human abodes. This "place utility" of land is imparted to it by establishing settlements on or near it. It may, however, be created, without moving human abodes, by reducing the efforts necessary to convey persons and products to and fro between the land and the settlements. Railroads may be said to manufacture place utility in land. Elevated railroads impart this quality to suburban districts of New York. Pacific railroads impart it to western

¹ It is not here denied that the original utilities of land are important when they are combined with other qualities that are more rare. The solidity of a building site in a city is important; but sites having that quality only are too abundant to be of value, and the actual price of a city lot possessing it is owing to the farther utility that it possesses by reason of its location. Sites on the alkaline plains lack only good location to make them as valuable as those of Manhattan Island.

territories, and the Panama canal will, if completed, impart it to opposite coasts of Europe and Asia. That which makes land accessible from the markets makes markets accessible from the land, and imparts a new place utility to the building sites of cities themselves. The improvements in transportation that have been said to "annihilate distance," and that have actually made it possible to carry bulky goods from one quarter of the globe to another, at a cost that absorbs only a small fraction of their selling price, have created this utility on an enormous scale. Migration is carrying markets to Montana and British Columbia, and railroad building is moving these territories toward the present eastern markets. Mechanical progress is transforming the world into one comprehensive mart. Protective tariffs still create economic remoteness between countries, but mere local remoteness is becoming a relatively unimportant factor. Man is making the world accessible, and in the actual market the place utility of land can never be a full monopoly.¹

There resides, however, in land that is literally near to a market a special accessibility that cannot be exactly duplicated by improved means of transportation. One can go from New York city to an adjacent county more quickly, as well as more cheaply, than he can go to a remote county or state; and he can safely ship perishable goods to and fro between such nearer points. There resides in a farm lying in Westchester county a residual utility that

¹Here and in the following paragraphs the term monopoly is used in the inexact sense in which it is used currently in discussions concerning land, as indicating that which exists in a rigidly fixed quantity, even though it be not in the hands of a single owner.

cannot be reproduced by labor. This residual utility, based on the fact of literal proximity to markets, gives to land the only monopoly value that resides in it. The monopoly is of a very limited and partial kind.

Fertility is a constant subject of demand and supply: and it has its market price and its natural or normal price like any other manufactured product. The superficial fertility that lies in loam itself is, as already stated, necessarily destroyed and renewed in the operation of agriculture. The loam is, in a certain way, distinct from the land on which it lies, and is to be regarded rather as a food-creating tool, that wears itself out in imparting to a product the chemical elements that it contains. There is an original period of exploitation in which the elements of fertility in the soil are so abundant as to be worth less than it would cost to produce them. When virgin soil that will produce ten crops of wheat without showing an appreciable diminution of the yield can be had for a dollar and a quarter per acre, it is unprofitable to resort to artificial fertilization. Rich loam is a drug in the market, and it is a waste of labor to manufacture it. After the original supply has been reduced, the process of soil manufacture becomes a necessary part of agriculture, and the food-creating qualities of surface loam, like any other product of industry, are worth what they cost.¹

There is a permanent fertility that depends, not on the presence in the surface loam of the chemical

¹This principle needs, of course, to be applied with a full knowledge of the fact that the elements of fertility that are restored to the soil, in well conducted agriculture, are, to a great extent, an incidental product, rather than the chief product, of the labor that secures them.

elements needed by plants, but on the capacity to so expose the loam to the favorable action of air, water and sunlight as to make it available. This element of fertility originally exists in great abundance. Much of the alluvium of the Mississippi valley was found in the first instance rich in the nutriment required by plants, and well situated for making it available. It was neither too moist nor too dry, neither too hot nor too cold, to yield crops of various kinds. In the end even this supply of original fertility is exhausted, and must be increased by labor. The building of dykes, drains and irrigating canals becomes a necessary part of the industry that supplies the country with food and with raw materials. When once this condition is attained, when once fertility of this permanent kind has become a necessary subject of production, it is, like any product, worth, in the long run, what it costs. Even the land that needs neither draining nor irrigating, is gauged, in its market value, by the cost of duplicating its qualities in other land.¹ The cost of dykes and drains measures the value of land that nature has made sufficiently dry, and that of irrigating canals measures the value of land that nature adequately waters.

What law of rent, then, can govern the earnings of this aggregation of unlike utilities? A utility that is original and indestructible, but so abundant as to be valueless, a utility that results from social growth and is a subject of limited monopoly, three

¹We here apply the principle that the final increment of the supply of anything, even though it be small, tends to control the price of the entire supply. In the case of land unusually large allowances must be made in the practical application of the law.

unlike utilities capable of being created by labor.—such is land in the economic sense. If there is one law that governs its market value, it must apply to four dissimilar properties that contribute to that value.¹ If there is one principle that determines its annual earnings, that principle must apply alike to the four dissimilar utilities. Is there such a "blanket" principle? Is there one formula that can apply to the rent of three unlike products of labor and one limited monopoly? To the immediate or market rent, yes; to the permanent or normal rent, no. Either for sale or for rent utilities of the most unlike kinds command rates that are fixed by a single principle, if we consider only the immediate returns of a particular time and place. In the long run there is one principle that governs the returns of monopolies, and another that governs the returns of things that can be produced by labor. The principle, moreover, that governs the returns of things capable of production, applies in different ways, according as an increased production of the thing in question is attended with increasing or with diminishing cost. If a utility cannot be duplicated the price and the rent of it are governed by the action of demand and supply, without reference to cost of production: if it can be duplicated its price and rent tend to conform to the

[In chapter VI. of *The Philosophy of Wealth* I have endeavored to show that the law that governs the natural or normal price of any commodity must embrace the forces acting on the different utilities that compose it. In the case, for example, of woollen cloth the elementary utility residing in the material is governed by a law of increasing cost, while the form utility is subject to a law of diminishing cost. The price of the cloth in its entirety is the resultant of these two laws. It is separate utilities that are created by industry, and that are the true subjects of demand and supply in the actual market.]

standard of cost, but that standard either rises or falls as the amount created becomes greater. No single principle can govern the permanent returns from an article that is an aggregation of one monopoly and three manufactured utilities. No single principle can govern the permanent rent of land.

There is in nearly universal acceptance a formula for determining the actual rent of land. It is often so expressed as to involve a large mathematical error,¹ but it may be so stated as to avoid this error, and to be, on grounds of theoretical accuracy, wholly unassailable. We shall not only take no issue with it on this ground, but shall extend its application beyond the limits usually imposed on it. We shall, however, try to ascertain the value of this formula, and to determine how much of meaning there is in it. We shall ascertain whether it affords in reality anything more than a circuitous mode of reaching a conclusion that a practical man would reach more directly, and that Adam Smith reached, and stated

¹This error appears where it is stated or implied that the rent of a piece of land equals the difference between the value of its product and that of the product of *an equal area* of the poorest land in use, supposing that the two pieces should be cultivated with an equal outlay of labor and auxiliary capital. The rent of ten acres of garden land near New York would thus have to equal its product, minus the product of ten acres of wood land in the Adirondacks or of grazing land in Montana, on the supposition that the two pieces should be utilized with the same outlay of labor and subsidiary capital. This supposition demands either that too little be spent on the suburban land, or that too much be spent on the low-grade land with which it is brought into comparison. The true statement is that the product of the ten acres in the suburbs of the city, minus the product of the indefinitely large quantity of frontier land that happens to profitably employ exactly the same amount of labor and secondary capital, equals the rent of the better piece. In applying the formula the acres compared are nearly always unequal.

in a simpler way. We shall discover also the radical defect of the Ricardian formula, whether stated in the customary form or in the older and simpler one. It applies to temporary or market rent, not to permanent or normal rent. There is the same difference between the two that there is between market price and the "natural" price that was fully discussed by Mr. Ricardo. The traditional law of rent is, therefore, a principle that, if it were intended to gauge prices instead of annual earnings, would be at once pronounced superficial. It states what is true at a particular time, but affords no permanent standard to which rent tends to conform.

The cause of this defect in the current law of rent lies in the fact that land has been treated as constituting in its entirety a natural monopoly: if it were so it would have neither a normal price nor a normal rent. It is idle to talk of the cost of production, in the case of a utility that cannot be reproduced. Land is not, in its entirety, such a utility: three of the four elements that constitute the value of it are capable of being created by industry; and these have their normal prices.

The transient rent of land may be correctly expressed by the Ricardian formula. This is, indeed, an *omnibus* rule, for it expresses the market rent, not only of the diverse utilities that constitute land, but of every concrete instrument of production. A ship, a mill, a canal, or a tool yields to its owner the income indicated by the classical formula, "rent equals product"¹ minus the product of the poorest in-

¹It is shown in a later note that the term "product," as thus used, requires a special definition if the formula is to state the truth in any connection. Without such a special definition of the term the Ricardian Law of Rent, even in its customary applications, would be vitiated.

strument of the same class that is utilized with an equal outlay of labor and auxiliary capital." So does every variety of land, from the mountain summit, that is nothing but a natural observatory, to the prairie that yields wheat, the mine that yields ore, the shore that furnishes dock room, and the street frontage that affords building sites. Whether the instrument in question can be reproduced by labor or is a natural monopoly is, for purposes of mere market rent, of no consequence.

There are, doubtless, in the world "no-rent" ships, mills, canals, and tools. There are no-rent mountains, prairies, harbors, and building sites. There can, doubtless, be somewhere found an instrument of each kind that yields to its owner nothing more than the wages of the labor that is involved in utilizing it, with the interest on any auxiliary capital that may be employed. The product of such an instrument simply equals the wages of a certain amount of labor, plus the interest on a certain amount of supplementary capital: and when we say that the rent of a better instrument equals its product, minus that of the poorer, or we simply say, in effect, that its rent equals its product minus such wages and interest. There is no other mathematical significance in the Ricardian formula.

Here is a piece of land; let us test by the rule the rent that may be had from it.

We take its product as a minuend, and, for a subtrahend, let the eye range downward through the list of similar instruments till it falls on a field that yields just enough to pay wages on the amount of labor spent on the field that we are testing, and interest on the auxiliary capital used in connection

with it. This, we can prove, is the poorest field that it will pay to cultivate, and we call it the poorest in actual cultivation. If worse ones are, in fact, in use, we throw them out of account. The income from our test farm then obeys the rule,—rent equals product minus such other product as ought to be, and probably is, equal to wages and interest on auxiliary capital. It takes but little mathematics to show that the formula resolves itself simply into this: rent equals product, minus wages and interest on auxiliary capital. The rent of any instrument is gauged by its capacity to enlarge the product of industry. Let x units of labor and y units of capital command in the general field of industry a product expressed by z . Give to their owners an instrument of production to aid them in some process; and if the product now is $z+1$ the rent of the instrument is 1. This is all that can be mathematically gotten out of the Ricardian formula; but such as it is, the rule is of universal application.

Let us test by the same rule the income from a ship. Ascertain the product that can be had from it, and then search the docks for the clumsiest hulk to which can consistently be entrusted as many men and as much auxiliary capital as are entrusted to the one that we are testing. This is the no-rent ship, and its product is the subtrahend in the second number of the rent equation: it equals wages and interest on subsidiary capital. The rent of the good ship equals its product minus the product of such other ship as pays wages and interest on auxiliary capital. In a simpler form the rent of the ship is its product minus such wages and interest. The earnings of this instrument are gauged by its power to increase the product

of industry. Precisely the same is true of the mill and the canal, the mountain summit, the mine, and the building lot.¹

Whether no-rent land, ships, mills, etc., actually exist or not is a matter of scientific indifference. The formula would be equally good without them. A hypothetical subtrahend is as serviceable in the equation as an actual one. The rent of a piece of land might be said to equal its product minus the product of the poorest piece that ought, according to economic principles, to be cultivated with the same outlay. We should then, in estimating the rent of a farm, appraise its crop and, from the value thus computed, subtract the value of a supposed farm of such a quality that if it were in fact cultivated, it would yield wages and interest on auxiliary capital, but no more. Now it takes but little reflection to perceive that the authors of the Ricardian formula actually proceeded in this way, and that those who use the rule do the same. There are in actual use fields that yield a minus rent, fields that fall short of paying wages and supplementary interest. These must be thrown out of scientific account or the formula is vitiated.² If it is to tell the truth about the rent of land or of anything else, it must compare its product with that of a similar instrument arbitrarily selected, because it yields just

¹In order that the formula may be actually true it is necessary that the term product be construed as including all increments of value attaching to the instrument itself, and all loss of value that it suffers by deterioration. The formula then applies equally well to all the concrete forms of capital.

²It may be said that these minus-rent fields are not in permanent cultivation. But the only evidence on that point is the *a priori* one above given. Science proves that it will not pay to cultivate them. There are certainly no statistics on the point.

the amount covered by wages and interest on auxiliary capital.

The universality of the rent law, when stated in a form that will bear testing, is the chief truth thus far attained by our analysis. The law becomes, indeed, a circuitous statement of the simple truth stated by Adam Smith when he said, in effect, that the rent of land is its product less what a tenant must reserve for wages and interest. In a general form the rent of any instrument equals the amount that it adds to the product of the industrial agents that cooperate with it. The earnings of all capital in concrete forms are gauged by the productive efficiency of those forms. Make a list of everything that industrial society uses, test the earnings of every piece by the Ricardian formula, add the amounts thus gained and you have the total earnings of concrete capital.¹

¹In testing the rent of a farm we virtually subtract from its product wages for labor and interest on auxiliary capital employed upon it. What is that auxiliary capital? Buildings, fences, drains, tools, etc. These are concrete instruments of production, and subject to the rent law. The rent of improvements, implements, etc., considered in the aggregate, equals the product gained in the process of using them minus wages of labor and interest on the value of the farm. In applying the formula to improvements, etc., the land itself becomes the auxiliary capital to be taken into account. What, then, if the returns of the industry afford a surplus above wages and interest on all capital, whether in land or in other things? That surplus is pure profit. It belongs to the entrepreneur; and the applying of the rent law in two directions, in the manner here suggested, enables us to accurately gauge the amount of it. The gross returns of the industry cannot, under such circumstances, be construed as the "product," that is the minuend in the rent formula; since, if they were so, the formula, when applied only in one direction, would be vitiated. Pure profit would figure as rent of the particular instrument to which the test might be applied. The product to be recognized in applying the law is exclusive of special gains resulting from exceptional opportunities and lying wholly within the

This grand sum is identical with the total earnings of abstract capital. The law of interest also is universal.

The rent that we have been speaking of is a mere market rent, not a normal one. It disregards the cost of producing the instruments. In the long run the market rent of most things conforms to a normal standard, as fixed by the element of cost. If the earnings of a ship are larger than those of a mill that costs as much, less mills are built and more ships. The competition of ships with each other then reduces their earnings to the standard that is maintained in other spheres of investment. It is the interest on the pure capital invested in an instrument of production that determines its permanent or normal rent. Pure capital gravitates to the points of greatest returns : it seeks out and vests itself in concrete forms that, as tested by the rent formula, give the greatest earnings. The result is an equalization of the earnings of pure capital : and this is the primary law that governs the returns of productive wealth. Pure capital interpenetrates and dominates the concrete instruments of production, and the law of interest, rather than that of rent, is permanent and supreme. The entire process of distribution resolves itself into a division of social earnings between labor on the one hand, and pure capital on the other, followed by an equalizing process on both sides. The earnings of

control of the entrepreneur. It is the product that the owner of the instrument can count upon if he lets it to an employer who possesses the normal amount of business ability and enjoys average opportunities. If this special definition of the term, product, be inadmissible, then the Ricardian Law of Rent, as now generally applied, is vitiated.

capital tend toward equality : and, with certain important reservations, those of labor do the same.

Has land a normal rent? Does the cost of producing it have anything to do with the earnings that it will in the long run yield? Does the equalizing principle apply to it, and will the pure capital that is vested in it generally return the same interest as that in other forms? The answer in each case is "yes." If land were a natural monopoly, pure and simple, the market rent of it would be the only one to be recognized, and that would be fixed by the Ricardian formula at a scarcity rate. Three of the four utilities that constitute its value are, as we have seen, produced by labor, while the fourth is the result of general social growth, and constitutes a limited monopoly. The rents of the three manufactured utilities are normal; they are governed by cost of production. Fertility, as secured by drains or irrigating canals, tends to secure for the makers of such improvements a return proportioned to their cost. Fertility gained by enriching surface loam is more immediately amenable to the rule of cost. The accessibility that is secured by improvements in the means of transportation conforms to the rule of cost only in a general and imperfect way; the disturbing influences that are a constant factor in applied economics need here to be made exceptionally large. Still, even here, with adequate allowances, the rule may be considered as operative. The utility that depends on local proximity to markets is independent of cost, and the rent that is secured by this utility is gauged by the Ricardian formula. The total earnings of a piece of land are a composite of three rents that are, in a general

way, normal, and one market rent that is fixed at a scarcity rate.¹

The importance of these principles lies in their bearing on future rents. The earnings of the single utility in land that is a monopoly tend to rise as population increases; the returns of the three utilities that are industrial products tend to fall as wealth accumulates and processes are perfected. The permanent rent of land in its entirety is the resultant of these opposing forces; it is the sum of four rents, of which one tends upward and the others downward. It is a scientific absurdity to treat land as, in its entirety, a monopoly, and as certainly destined to increase in its rental value to the end of time. Given certain conditions, and the total rent of the four utilities of land will increase; given certain other conditions and it will decrease. The conditions of increasing rents are now realized in the world; those of a general decrease may be slow in coming, but those of a retarded increase are near at hand. How soon and how extensively the checks upon rent may make themselves felt is a question of the relative strength of opposing forces. The utility in land that is a limited monopoly is at present rising in value so rapidly as to obscure the presence of the three other

¹ Living as we are, in a period of original occupation and exploitation of land, when the natural utilities in it overshadow the artificial ones, we have difficulty in realizing the permanent relation between those kinds of utility, and the idea that either the price or the rent of land may conform in any considerable degree to a standard of cost, may seem altogether theoretical. It will probably seem less so when the interval of exploitation shall have been, in the main passed, and when land shall be utilized in a normal way. Scientific laws are those which hold good in the period of normal utilization.

utilities, and to give to land, as a whole, the fictitious appearance of a monopoly. This appearance exists, however, only to the hastiest view, a second glance shows its unreality. Even during the epoch of grand exploitation, while a continent has been in process of seizure, counteracting forces have sufficed, in particular localities, to depress land values. Agricultural rents have fallen in a great part of New England. More and better land has been artificially made accessible : and though the utility that once gave a high value to the lands of these States, namely, capacity to be easily reached from markets, resides in them to-day in a still greater degree than ever before, the value of it is lowered by the great supply of that same utility that has been thrown into the market.¹ We have manufactured so much of this land value that we have depressed the price of what nature gave us.

When once the period of original occupation and exploitation is over a new set of conditions will supervene. Agriculture that is now enlarging by territorial expansion must thereafter enlarge by a process of compression. It must become more and more "intensive" within given areas. Instead of striving to include as many acres as possible within the area to be tilled by a single man working with a minimum of capital, it will find itself forced to expend more and more labor, and to employ more and more auxiliary capital, within a given area. With the epoch of intensive agriculture the artificial

¹The subject of the utilities created by improved means of transportation demands a fuller treatment than is possible within the limits of this sketch, and may receive it in the treatise referred to in the prefatory note.

utilities of land must come definitely to the foreground. With population growing slowly, and with capital increasing normally, there may be afforded conditions in which the cheapening of the utilities of land that are created by industry shall overbalance the increasing dearness of the one that is a residual monopoly, and give, as a resultant, a declining rent of land in its entirety.¹

In his valuable treatise on *The Premises of Political Economy*, Dr. Simon Patten has called attention to the fact that, when once auxiliary capital has been put into land in the form of large permanent improvements, it cannot be withdrawn; and if such improvements have been made at the margin of cultivation, they must have permanently extended, at that point, the cultivated area. Even a decline of population would not throw out of use the particular piece that has been thus extensively improved. Slight improvements may carry a piece of no-rent land just within the margin of cultivation, and leave it where the first decline in population would throw it out. Great improvements carry it so far within the limit that it cannot thus be thrown into disuse.

To this a critic has replied that though the particular piece of land thus improved might not be thrown out of use by a diminution in the demand for crude products of the soil, other pieces would be so, and the Ricardian principle would hold good, that the margin of cultivation advances with increasing population, and recedes with every decline. The recession may not take place at the point of advance.

¹Land not subject to artificial improvement may decline in the return that it yields per acre; and land that is subject to such improvement may show a corresponding fall in the income that can be attributed to its natural utilities.

Putting both views together, since both are true, we have a picture of what might occur if the demand for crude products of the soil were subject to considerable alternations. There would be a substitution of artificial utilities in the soil for natural ones. With an increased demand for raw products a swamp would be drained and a rich field secured; with a decline in that demand a barren hillside would be abandoned. With another advance a plain would be irrigated, and with the following reaction some half arid stretch would be given up. If the decline in the demand in each case equaled the advance, there would result a permanent recession of the margin of cultivation in certain quarters, and a permanent advance in others. There would be a constant gain in the proportion that artificial utilities in land bear to natural ones. Man's work would slowly supplant the untouched work of nature.

It needs to be noted, in passing, that economic science has contented itself with an exceedingly crude conception of the phenomenon known as the advance of the margin of cultivation. Agriculture has been in the main treated as if it were homogeneous. A given area has been tilled, some of it with more and some of it with less of labor and capital; but varieties of tillage have played a small part in the theory of the subject. For exact results each distinct kind of agriculture needs to be treated as a separate industry. The principle of non-competing groups has as clear an application here as in other departments of economy. Wheat farming can scarcely be said to come into competition with sheep raising; nor can market gardening with dairy, farming, wood growing, or cattle raising, not to

mention such special industries as the cultivation of cotton, flax, tobacco, hops, rye, barley, etc., nor the making of lumber, the gathering of resinous products, and the many varieties of mining. Each of these industries has its own margin of cultivation; and the advance and recession of it is governed, in each case, by specific conditions. Moreover, a rent law, to be available as a principle of distribution, must apply to every economic use of land, whether agricultural or not. It must gauge the returns of building sites, water fronts and water powers, railroad ways, etc. In general an advance of the margin of cultivation resolves itself, not so much into the taking of new land into the area already utilized, as the carrying of some of the more "intensive" forms of industry into regions formerly occupied by more "extensive" ones. When lands given up to the growth of brush-wood become pastures, and when corn-fields become market gardens, the margin of specific industries will have advanced: and this is the only kind of advance that in the long run needs to be much considered. The absolute extension of the area of economic utilization must, as it would seem, soon cease to play an important part in general industry. The poorest land will at some time lie within the ultimate margin; it will have some economic use. The substitution of one use for another is caused by some specific change in the quality of social consumption.

Reverting now to the subject of the substitution of man's work for that of nature, in fitting land for effective service, we find that it is not necessary to suppose that the demand for crude products fluctuates in order to have conditions in which land man-

ufacture becomes an increasing element in economics. The conditions that control this tendency are subtler than those in the case just noticed. They lie in the relation of pure capital to final consumption. How much instrumental wealth have men, and how much consumers' wealth do they use?—are test questions. Moreover, in the final consumption, the quality of the commodities used is important. What kind of goods men buy for their own use is as large an element in the problem as how much in mere quantity they buy.

The discussion of this subject would transcend the limits of this essay, but it is necessary, even here, to indicate the forces that tend to increase the proportion of artificial utilities in land, and to make it more and more subject to a law of normal rent. Let us suppose that the original occupation of our territory for industrial purposes of some sort were, in the main, completed. There would still be great areas not actually tilled, and an increase in population, while capital, interest, and wages remained stationary, would advance the area of actual tillage and increase the proportion that natural utilities in cultivated land bear to artificial ones. With more people we should have more acres in use: meadows would become gardens, pastures meadows, and waste lands pastures: but there would be no costly redemption of swamps and arid plains.

Vary the conditions: let capital increase rapidly, and population slowly or not at all, and you will see good land manufactured and the poorest of the natural fields thrown out of tillage. With more wealth we shall have better land and less of it.

Vary the ratio of distribution: give more of the income of society to labor and less to capital, and you

turn the land-making industry into a new direction, and make the new fields produce "qualitative increments" of food, clothing, and shelter. There will be a demand not for more food, etc., but for better food, finer clothing, and more comfortable dwellings.

If the ground be taken that this increase in the reward of labor must always lead, in a short time, to an enlarged population and a reduced rate of wages, the conclusion will be drawn that the only permanent effect of the transient prosperity of labor will be a call for more crude means of subsistence, and a pushing forward of the margin of cultivation in order to get it. If the healthier view be taken, that prosperity among wage-earners does not necessarily annul its own effects, then it will appear that an era of high wages may cause a permanent qualitative advance in production. It may raise human life to more rational levels. The elevation of man's mode of living causes the earth itself to change under his manipulation. Less of coarse products are demanded and more of fine ones; these require special qualities in the soil that furnishes them, and there results an increasing preponderance of the artificial utilities of the land itself, a literal subjugating of the earth, followed by and again following the improvement in man's own nature.

The conclusions thus far reached may be summarized in the following propositions:

1. Rent is the part of the social income that is earned by concrete instruments of production. Interest is the part earned by the abstract fund of pure capital that is embodied in these instruments.
2. The Ricardian law of rent, when correctly stated, governs the market rent, not only of land,

but of all concrete things into which pure capital enters.

3. Instruments artificially made have a normal as well as a market rent. This is governed by the cost of producing them. Pure capital flows spontaneously into the forms in which it yields the largest returns, and reduces those returns to the level fixed by other instruments of equal cost. The tendency of interest on pure capital is toward a general level; and this tendency governs the returns of all artificial instruments of production.

4. Land is partly subject to this law. Of the utilities that constitute its producing power and create its total rent, three are subjects of artificial production and command normal rents: the fourth is a limited monopoly and commands a market rent only.

5. The principle of non-competing groups needs to be applied to agriculture, if the true nature of the advance and recession of the margin of cultivation is to be apprehended. There are, in reality, as many margins as there are distinct groups.

6. The effect of higher civilization is to cause the artificial utilities of agricultural land to predominate over the natural ones, and to thus subject this complex instrument more and more to the law of normal rent. The element in land that is a monopoly is losing its relative importance.

THE EARNINGS OF PURE CAPITAL.

In attaining a simple formula that governs the rent, not only of land, but of every concrete instrument of production, we have incidentally attained an equally simple rule that applies to the earnings of all pure capital, whether it be invested in the

ordinary instruments of production or in land itself. It is based on the equalizing action of pure capital; its earnings tend toward a universal level. There can, therefore, be no permanent question in equity between one class of capitalists and another: neither can there be such a question between workmen and a particular class of capitalists. Whatever permanent grievance workmen may have on the ground of the general results of distribution is against the capitalist class as a whole. Natural law, in the long run, levels inequalities, and if one class of property owners appears to-day to be specially favored, it may by to-morrow appear to be correspondingly oppressed. A uniformly low rate of interest on capital in every form is one general result of natural law in distribution.

The principle that tends to give to capital a uniform reward, regardless of the form in which it may be embodied, is a chief basis of an equitable system of distribution. It is pure capital that represents "economic merit," or personal sacrifice incurred in the service of society. While it is of no consequence that a mill, a ship and a farm should earn like sums for their owners, it is of every consequence that ten thousand dollars, the fruit of twenty years of labor, should command the same annual return, whether it be invested in mills, in ships or in farms. This adjustment is, indeed, never exact, and at particular times there are large variations from it: but the tendency toward it is an invaluable result of natural economic law.

We have said that this leveling principle applies to the capital that vests itself in land as well as to that that finds other forms of embodiment. The part of

the fund of productive wealth that is embodied in land, even apart from all artificial improvements, tends, under the influence of competition, to secure for its owners rates of gain that, considering the time and manner in which they are realized, tend to make this form of investment neither more nor less lucrative than others.¹

The so-called unearned increment of land is an integral part of the gain that is realized from the pure capital invested in it. If the nominal or contract rent accruing to an owner of land from the industrial use of it, plus the increased value that the instrument itself acquires by time, equals the true rent of the instrument : and that sum is the true interest on the pure capital that it contains. If this is large, as compared with interest elsewhere realized, capital tends to flow in increased amount towards this form of investment, and to reduce the interest there realized to the prevailing level.

What is the immediate method by which an increased amount of capital can vest itself in a given amount of land ? By competing for the purchase of the land in the market, and raising the price of it. Land manufacture is a slow process. Three of the four utilities that constitute the value of this instrument are, indeed, capable of being created by labor, and in no connection must this fact be overlooked : but the production of them involves time, and before

¹Security against ultimate loss is an element that affects the nominal rate of interest on a particular investment ; and so is the element of immediate convertibility. Investments that are safe and quickly convertible bear the lowest interest. Capital in land possesses one of these advantages, but lacks the other. It is safe, but highly inconvertible ; and a part of the return that is realized from it is an offset for the uncertainty and delay in realizing that return.

it can happen a competition may take place for the possession of the land already in the market. The price of it then rises till it ceases to furnish a specially desirable form of investment. The price reached is that at which the pure capital that the land embodies is rewarded at the same rate as other portions of the general fund that are invested in equally safe and convenient ways.¹

If the rent of land be fixed, the price of it tends to vary inversely as the rate of interest; the farm that is worth ten thousand dollars when interest stands at five per cent. should, if its rent remains the same, be worth twelve thousand and five hundred, when interest shall have fallen to four per cent. At its former price it would now constitute a specially lucrative form of investment; and under a system of free sales and easy transfers of land, capital would seek it in such quantities that its price would rise, and the special inducement to further investments in this direction would be removed. Interest is, in fact, declining, and the price of land is consequently rising. A part of the "unearned increment" is the result of that tendency of capital toward uniform earnings that is so important a feature in an equitable system of distribution. If a given amount of "economic merit" is to win everywhere a uniform reward, capital must seek investment in land whenever interest declines, and by the process raise the market price of this instrument.

The system of social industry rests on the right of men to what they create. That is not things but

¹Under these circumstances the man who buys land and pays for it knows nothing of any unearned increment of gain. He or some near relative acting in his interest has earned what he gave for the land, and by so doing has earned all that he will get from it.

utilities : nature furnishes matter, and man modifies it so as to make it serviceable. It is, moreover, in civilized industry, not so much a particular utility as a quantum of utility in the abstract that a producer is obliged to claim as the fruit and the natural reward of his efforts. He makes, indeed, a distinguishable product ; but he merges it with those of many other workers in some completed commodity. He may perform one of the sixty-four operations that constitute the making of a shoe. The utility that he creates is definite, but he can never get possession of it ; and it would be useless to him if he did so. It has become an inseparable part of the shoe that represents the work of a little community of laborers. Now this modification of crude leather, which a worker affects many times in a day, represents a distinguishable quantum of effective social utility. In the aggregate it is pure capital of the circulating kind. A particular touch imparted to some hundreds of shoes represents a given value in the market, and it is this that a workman regards as his social product, and that he seeks to obtain in the form of wages. In any highly developed industry it is only an abstract quantum of wealth that a particular worker can claim and receive as his product.

Even the working group as a whole cannot identify and claim a particular concrete product. The shoemakers expend their work upon leather ; that, however, is the finished product of a series of earlier groups. As ready for final use a case of shoes embodies the products of cattle raisers, tanners, transporters, shoemakers, and various wholesale and retail dealers, besides those of a multitude of groups of producers of subsidiary materials such as thread, eyelets, pegs of wood or steel, coloring matter, elastic, etc.

If we were to select from each of these groups the particular men whose work is represented in the case of shoes, and were thus to make a complex group containing every one having a claim on it on the ground of labor; if we were to bring into this abnormal group all others having rights in the product because of capital that they have furnished to facilitate the making of it, we should still be unable to make good the claim of this small army of producers to the actual possession of the concrete product that they have made. That finished commodity is at once launched on a sea of commercial exchanges, and carried out of sight. It can never be found again; and if it could, it would be a mockery of the claims of laborers and capitalists to trace the product and bring it back to them. They made the shoes that they might part with them; what they claim as their own, to have and to hold, is the quantum of effective social utility that is embodied in them. The shoes represent an aggregation of values: in its entirety this rewards the complex group that made them; as resolved into its constituent quantitative elements, it rewards every worker that has contributed to it. Wealth in the abstract, mainly in the form of pure capital, is the prime subject of property rights.

Society vindicates the right of property in the manner in which it is asserted. It enforces the claims of the shoe producing group as a whole, not by tracing the shoes to their ultimate owners and wearers, and bringing them back to the men who made them, but by compelling every purchaser to pay for what he has. It also vindicates the rights of particular workers, not by trying to get for them fractional parts of shoes, but by conveying to them

the value that those parts represent. The claims that society expends its strength in vindicating are, in the main, claims to pure capital of the circulating kind. Once in the social cauldron a man's concrete product is lost beyond recovery ; all that he can get is its essence.—the quantum of abstract wealth that it contains.

In primitive social states the case is otherwise. The savage guards his dugout, and the fish that he catches by means of it. Even here it is the utility and not the thing that holds it that is the true subject of the owner's claim. It is the service that the canoe can render that rewards the owner's sacrifice. If he were to lose his canoe without losing the service he would suffer no harm : but the service is inseparably bound up with the canoe itself. To protect it he or his tribe must protect the canoe. In the absence of exchanges what a man makes he, for the most part, keeps in the form in which he makes it : and if a crude tribal police would vindicate his right to essential wealth it must protect him in the possession of the particular concrete things that contain it.

In the case of certain values civilized society may still afford the easiest and best protection by guarding the vehicle that contains them. Fixed capital and consumers' wealth are regularly thus protected. In preserving for an owner the utility residing in a tool, a building or a piece of land, or that in a watch, a coat, a jewel or a piece of silver ware, society incidentally retains in his possession the identical article in which the utility resides. This protection of particular concrete articles is subsidiary and relatively easy. The police effort necessary for this purpose is indefinitely smaller than that involved in guarding

pure capital that is exposed to the dangers of a system of exchanges. It is in this latter field that great losses actually occur. It would take all the larcenies and burglaries occurring in a commercial city in a year to equal in their effects a single great financial swindle.

Society, then, makes it one of its primary ends to protect for owners the values that represent and reward their personal sacrifices. Incidentally it protects the forms in which those values are embodied, whenever such a course subserves the end in view. In a majority of cases the total abandonment of the form in which the value was first embodied is the natural, and, indeed, the only practicable course. The passive instruments of industry lose themselves in the market, and their owners only recover the value that they represent.

To the owners of capital the particular forms in which it may be embodied are so relatively unimportant that a conflict between the claim that a man has to a particular thing and the claim that another has to the value that it contains leads to the sacrifice of the claim to the article itself. The man who is in debt must part with concrete property if there is no other way to convey value to his creditor. If the value be in any way due to society the case is indefinitely stronger, and an owner's claim to concrete things must at once give way before it. A man may be made to yield anything that he has in order to promote the essential interest of society. The value of his property he keeps. Eminent domain does not weaken true property rights; it strengthens them. The law makes ample compensation to those whose concrete possessions it takes away. Eminent domain

is the right to change the outward form of a man's essential property, in order to preserve or increase the essential wealth of society. If it takes land for a public building it pays for it, and thus preserves the owner's capital intact: while, by the use that it makes of it, it protects and enlarges the capital of the community. This transmutation of the outward form of property an owner may at any time suffer: the property itself is, under good governments, secure,

Here, then, is one clear principle of economic polities. Abstract wealth is, in civilized states, the fruit of personal sacrifices: men work to obtain value, and they satisfy their wants by means of it, whatever may be its outward form. Claims in equity center here. Let value be everywhere protected: let its forms be transmuted with perfect freedom whenever by this course the essential interests of society can be promoted. The rights that center in the forms of property are trivial; those that center in the value of property are vital. Toward the forms of a man's wealth the state may conduct itself with imperial indifference; toward their content it must observe the scrupulous respect of a perfect court in equity.

The individual has a supreme interest in the mere amount of his pure capital; he has an inappreciable one in the form that it assumes. Whether he has ten thousand dollars or a million is for him a vital point: whether the million be invested in mills, railroads or farms is of little consequence. The state, on the other hand, has only a slight interest in the amount of a particular man's capital,¹ but it has a great interest in the form of it. That a man has a hundred millions of dollars is of little significance in

¹The total amount of social capital is, of course, important.

comparison with the fact that that sum is concentrated in wheat, in copper, in oil, or in railroads. Monopoly inheres in the form of capital, not in the essence of it. True monopoly, in the objectionable sense, is the undue concentration of one capital in a single form, to the peril of other pure capitals. It is the exercise of a tolerated privilege of formal concentration of property, and is liable to violate the higher rights of property itself. Wherever it develops under natural law it is a clear subject of governmental oversight and regulation. The abuses of it are a clear subject for governmental suppression.

It is a current impression that the era of competition in the production and sale of manufactured commodities is passing away, and that the era of pools and trusts is to be one of essential monopoly in many directions. It is safe to say that this impression is hastily drawn, and that a very effective competition survives the formation of these seeming monopolies.¹ Yet the state cannot afford for a moment to trust to any theoretical conclusions as to the outcome of this movement, and must watch unceasingly the growth and action of the pools that concentrate such limitless amounts of capital in single forms. It is inherently perilous. It is the nature of a capital thus concentrated in a single form of investment to menace, if not to trench upon, the property of the rest of the community. Yet the kind of competition from which pools have delivered us is an alternative evil too great to be suffered, and the state sees itself compelled to study and master new and gigantic

¹For a discussion of this residual competition see the chapter, by Mr. F. H. Giddings, on The Persistence of Competition in the book entitled, *The Modern Distributive Process*—Ginn & Co.

forces. To suppress pools is both undesirable and impossible; yet the end toward which they appear to strive is monopoly; and a true monopoly, if it were to be attained, would imperil the rights of society.

The point of present importance, in connection with pools and trusts, is that only through the form in which their capital is invested are they in any way objectionable. It is therefore only the form that the state should even seek to control. Leave pure capital alone. Protect it and let it grow to any extent. Let fortunes that are not tainted by fraud in the making rise into the hundred millions without fear or envy. When they mass themselves in a single investment the problem presented to the community is how best to transmute them in form, leaving their substance unimpaired.¹

The free sale of every kind of property is the natural means of preventing monopoly. When commodities are monopolized in the making, as in the case of a successful pool or trust, it is essential that the way be kept open for capital from without to flow freely to the point of large returns. When the absorption of a product takes place after it is completed, as in the case of a corner in produce, it is necessary that every legal facility should be afforded for the purchase and sale of that product. Outside capital then presses from every direction upon the

¹The question may suggest itself whether fortunes of such dimensions can be amassed without fraud, and whether, if they could, the owners would be morally at liberty to use them solely for their personal benefit. These questions lie outside of the scope of the present inquiry. If great fortunes are untainted by fraud the state has no call to reduce them. The ultimate right of the state to demand the sacrifice of the property and even of the life *as a necessary measure of self-preservation* is not here denied.

artificial barrier that speculation has erected, like rising water upon a coffer-dam. The breaking of the barrier is, in the end, inevitable, and the task imposed upon the government in its protection of the equities of capital is lightened. Ninety-nine one-hundredths of the work are done by natural law .

Free purchase and sale, the unimpeded flow of capital to the points of large reward,—this is the safeguard against monopoly. If a manufacturing trust is sustained by patents, the patent laws are a subject for legislative amendment. If it is upheld by protective duties, the law at this point is a proper subject for study and change. Guarantee the action of natural law, and it will do of itself much of the regulative work that is chiefly needed. If a residual work remains for the government to directly do it will be relatively simple.

The policy of maintaining freedom in the purchase and sale of commodities emphasizes the duty of the state to protect to the uttermost pure capital in every form of authorized investment. Independently, indeed, of this particular consideration, the right of a man to the social utility that his personal sacrifices have created is a clear one, and the duty of the state to guard that right is equally clear; yet the state may and does lay additional emphasis upon the duty by its action in inviting the free purchase of all forms of property. In its own interest it keeps all doors of investment open to pure capital, and invites it to enter. It sanctions by a special contract its antecedent duty of protecting it. "Go where you will," the state virtually says to pure capital, "it is for my interest that you seek the most profitable forms of investment, and I take on myself the duty of protecting you."

Pure capital when invested in land has the same rights that elsewhere belong to it. Whether nature, or society, or individual man made the earth as an economic entity, man makes, by personal sacrifice, the value that he pays for it. That value is the subject of his claim: the land itself is a vehicle, and may be shifted with entire freedom, if public necessities so demand. The fruit of personal sacrifice, embodied, with the sanction of the state, in the commodity, land, is sacred as against spoliation from any and every quarter.

Yet here also the right that is absolutely clear is put in a special light by the confirmatory action of the state. The free sale of land affords the practical safeguard against monopoly. It has already diffused to an extent not dreamed of in most states the benefits accruing from the rich endowment that America possesses in its soil. It has made us, even when not agriculturists, a home-owning community. It keeps the door of land ownership open, so that wherever men voluntarily refuse to enter it, they give evidence of having a more desirable alternative investment for such pure capital as they may possess. With land in abundance for sale the man who does not buy it, either has no pure capital, or has what is to him a better use for it. A free and active land market is a primary natural guaranty of equity. Yet the maintenance of freedom of sale in the case of land involves here as elsewhere a special duty of protecting the capital that shall vest itself in it. Let the state in its own interest invite capital to freely vest itself in land, and it does not, indeed, create the duty of protecting it, but it places beyond all controversy the duty that already exists. The state must,

in any case, preserve all value created by personal sacrifice ; but if anything can strengthen this clear obligation, it is the fact of having, for the promoting of one of its own vital interests, invited capital to vest itself in a particular form.

Should the free sale of land fail, in the end, to counteract the growth of monopoly, should landholdings become perilously large, a line of action is clearly within the scope of the state's authority. It may manipulate as it will the forms of capital. It may release and restore to the owners of this particular vehicle the pure capital that they have invested in it, and dispose of the container as it will. Eminent domain, by changing one capital in form, may preserve or increase a hundred others in substance. It is in the interest of value, the fruit of personal sacrifice, that the course is taken. If land, then, is anywhere dangerously monopolized, take it, pay for it, and use it as you will. Expediency here has much to say, but not equity. You will have guarded the essential wealth that, by your invitation and in your interest, has vested itself in this form. The evidence of *a priori* law, and the practical signs of the times, indicate that measures not a few for the diffusion of land ownership are in store for us in future eras. What our government has already done it may do hereafter, though in the face of greater obstacles. It may divide lands and put owners and cultivators upon them, even though it cannot continue always to present a farm to every man who asks for it. The land reform of the future will curtail great holdings and multiply small ones, while protecting to the uttermost the value that is anywhere invested.

What if the state should reverse this process? What if it should respect the form of landed property and seize the essence of it? What if it should leave every owner in possession of his land, and by taxing that land up to its full rental rate, take all the value out of it? Would it be robbery? No: it would be the quintessence of robbery. The act of the highwayman, who should demand your money, take it from your purse and complacently present to you the purse itself as the sole thing to which you have a right, would be in comparison a mild offense. The logic of the two cases would be identical. Property inheres in essential value, not in the form that contains it. Property in land is the right of the artizan, the clerk, the teacher and the farmer to their earnings, as saved and put into homes and farms. It is the right of the capitalist to the wealth that, by invitation of the state and for its interest, he has entrusted to this form of investment. Take the form, if you can establish a case of public expediency for such a measure: the content is the fruit of labor and waiting, and the right to it is the one sacred thing in economic politics. Touch it and you are a robber in somewhat more than the first degree. Inaugurate a systematic policy of taking it by public authority, and you place yourself and your government somewhat beyond the extreme left in the revolutionary gradation. Anarchy would become, in comparison, almost a negative and harmless state. Out of a condition of no government some government will emerge; but what can come from a positive rule that is the refinement of spoliation? What hope is there for a state, established primarily for the protection of person and property, and now system-

atically seizing the special element in concrete wealth in which rights of ownership inhere? Here as elsewhere the instincts of men are trustworthy. Pure capital in land is and will be protected, and the measure that has no hope of success is the one that shall antagonize this moral verdict.

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I.

The Manual Laboring Class,

BY PRESIDENT FRANCIS A. WALKER.

II.

Mine Labor in the Hocking Valley,

BY E. W. BEMIS, PH. D.

III.

Report of the Second Annual Meeting,

BY RICHARD T. ELY, SECRETARY.

AMERICAN ECONOMIC ASSOCIATION.

JULY, 1888.

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PREFACE.

The two essays printed in this monograph conclude the series of papers read at the second annual meeting in Boston. The proceedings follow, and are simply an amplified program, printed in order that we have a permanent record of them, and also to give to members not present a systematic account of what was done at Boston. I would call special attention to the report on the Springfield branch, printed in full on pages 62-68. We have now four local branches, namely: one each at Buffalo, N. Y., Galesburg, Ill., Orange, N. J., and Springfield, Mass. Nothing is more to be desired than the formation of local economic societies in every part of the country. These will find their work advanced by connection with a national organization, and I venture to hope that Dr. Bemis's paper will stimulate many members to form new local organizations.

A list of members of the Association is appended, from which it will be seen that our membership is considerably more than twice as large as it was when our last list was published. It is very desirable that our membership should be further increased, and it is to be hoped that present members will exert themselves to secure accessions.

The Executive Committee of the Council, to whom the matter was referred, have decided that our next annual gathering shall take place in Philadelphia in the last week in December.

RICHARD T. ELY.

Efforts of the Manual Laboring Class to Better Their Condition.

Opening Address at Second Annual Meeting of the American Economic Association in Boston, May 21, 1888, by the President, General Francis A. Walker.

The intensity which the great debate regarding the so-called “relations of labor and capital” has acquired during the past year, seems to me almost to demand that at this, the first general meeting of the American Economic Association held since its organization in 1885, a subject of such great and pressing importance should receive more consideration than has been assigned it in the programme of papers to be read during our session; and I have, therefore, decided to take for my theme “Efforts of the Manual Laboring Class to Better their Condition.”

From no other point could we obtain an equally impressive view of the progress which has been made in economic thought during the past twenty-five years. At the beginning of that period, the accepted philosophy of the subject, both in England and America, declared that the manual laboring class were not called upon to make any efforts for themselves in order to secure their just distributive share of the product of industry. It was then held by all economists of reputation in either country, that the competition of employers among themselves

for the profits of employment amply sufficed to fix the rate of wages as high as it could be maintained without an injurious reaction. The laborer was not called upon to seek his interest; his interest would seek him and would find him. Even unfair methods and a grasping spirit on the part of employers could not, in the long result, impair the remuneration of labor.

"Unless," said Prof. John E. Cairnes, having in view the forcing down of wages by a combination of employers, "unless we are to suppose the character of a large section of a community to be suddenly changed in a leading attribute, the wealth so withdrawn from wages would, in the end and before long, be restored to wages. The same motives which led to its investment would lead to its reinvestment; and, once reinvested, the interests of those concerned would cause it to be distributed amongst the several elements of capital in the same proportions as before. In this way covetousness is held in check by covetousness, and the desire for aggrandizement sets limits to its own gratification."

"If, in the division between profits and wages," said Prof. Perry, "at the end of any industrial cycle profits get more than their due share, those very profits will wish to become capital, and will thus become an extra demand for labor, and the next wages fund will be larger than the last." And the same economist wrote elsewhere: "If capital gets a relatively too large reward, nothing can interrupt the tendency that labor shall get, in consequence of that, a larger reward the next time. If capital takes an undue advantage of labor at any point, as unfortunately it sometimes does, somebody, at some

other point, has, in consequence of that, a stronger desire to employ laborers : and so the wrong tends to right itself."

While, thus, the action of competition among the employing classes themselves, for the profits of employment, was certain, even in spite of a grasping spirit and unfair methods, to yield the highest rate of wages which the existing conditions of industry would allow to be paid, distinct efforts on the part of the laboring class to secure a larger share of the product, could, at the best, only be nugatory, and would be more than likely to prove mischievous.

How great the change in economic opinion ! To-day, few economists of reputation would deny that the laboring class have as real, as large, as vital a part to perform in securing a just and beneficial distribution of the product of industry, as the employing class. It is seen and admitted, that competition must be imperfect, and, by consequence, injurious, unless the laborers, on their side, are as alert, active and, in the primary sense of that term, as aggressive, in pursuing their economic interests, as the old theories of distribution assumed that the employing class would be. It is seen and admitted that, if the workman does not seek his interest, not only will he, in a degree, lose his interest, but, through his failure to receive all the economic good which might with proper effort have been brought to him, immediate injuries, tending to become permanent, not only may conceivably, but certainly will, be inflicted upon the whole industrial body. It is seen that it is for the interest, the particular, selfish interest of the employing class themselves, that, in all their dealings with the questions of work

and wages, alike in large matters and in small, they should have to do with men who are acute and alert in seeking out opportunities for their own industrial improvement, with men who are persistent and courageous in following up every possible industrial advantage, when once it has been rightly discerned; that they should have to do, not with men who have no opinion for themselves, what they ought to receive, and who humbly and thankfully take that which may be given, but with men who, not less as laborers than as citizens, shall know their rights and, knowing, dare maintain.

In a word, we have recently passed through a change in economic opinion equally important with, and indeed closely analogous to, that great change in political opinion, which began more than a hundred years ago, and which was accomplished, not without trouble and turmoil, not till after great waste and hideous losses, about the middle of this century. Under the old régime, the accepted philosophy of government declared that certain privileged persons and classes were the natural and proper guardians of the mass of the people; that the interests of all, rich and poor, high and low, were so bound up together that if one member suffered the others must suffer with it; that, inasmuch as the state could only be wealthy and strong through the prosperity of all, there was in this a sufficient guaranty against abuse and neglect of the lower classes on the part of the higher, and that, under these conditions, all authority might, not only safely but advantageously, be lodged with that part of the community which had the most leisure and aptitude for government, in which resided the highest intelligence, the widest culture, the strongest instincts of command.

It is not necessary to recite the arguments from reason or the blows from force by which “we have changed all this” in the domain of politics. It is now universally seen and admitted that there is no security against tyranny, save in the power and disposition to resist and resent tyranny: that the masses of the people are the only proper and safe guardians of their own interests: that it is just as truly and just as much for the welfare of the upper classes as of the lower classes themselves, that the latter should be bold and resolute, quick to see their interests, prompt to assert them, persistent in maintaining them.

In economic opinion the change, may I not say the revolution? began much later: but it has been carried through at once more rapidly and more peacefully: first, because the other revolution had already been effected, preparing the way for this: and, secondly, because of the greater volume and force of entirely disinterested sentiment operating in the later case.

It would scarcely be conceivable to-day that an economist of learning and reputation should gravely argue that the employer is, in effect, a trustee of the laborer's wages, and that it really does not matter whether, in any given time and place, he pays the laborer more or pays him less, since by as much as the employer may under-pay the laborer in any instance, by so much will he certainly and indefeasibly over-pay him in some subsequent instance. The economists now see, what the workmen long ago saw, that each man is the natural trustee of his own earnings, and that these are only safe when paid into his own hands.

This change in economic opinion did not come all at once. Its first manifestation was perhaps in 1864, when Prof. Fawcett, regarding whom a distinguished English economist wrote me, at the time of his lamented death, that one-half of his actual intimate daily companions were laboring men, announced at Cambridge his conviction that, while the rate of wages was, in ordinary times, determined altogether irrespective of the efforts of the working classes to secure their own interests, yet, in transitional periods, when rapid alterations of industrial conditions were taking place, combinations of laborers might be effectual to win some portion of what would otherwise go in enhanced and excessive profits. That change of opinion has proceeded to the present time when, as previously stated, it is fully recognized that the self-assertion of the laboring class importantly contributes to the equitable and beneficial distribution of wealth; and that such self-assertion, within proper limits and by proper agencies, is not more for the interest of the laboring class than of the employing class, or of the community as a whole.

Inasmuch as so short a period has elapsed since there was a general consent of economic opinion that all distinct efforts of the laboring class, directed to the advancement of their own interests, must at the best be useless, and might and probably would become mischievous, it is not at all surprising that wide differences in belief should still exist as to the limits within which such efforts should be confined and as to the agencies by which they should be conducted. Even were scholars only concerned, it would necessarily take much time to educe the full philosophy of such a subject; to give to powerful agencies, so

recently for the first time recognized, their due place and mode of working, that they should do only good and not also harm, or even that they should, in the immediate instance, do more good than harm. When the problem is, not to secure agreement among a body of scholars as to the limits within which such agencies may safely and advantageously operate, but to instruct and educate the whole mass of the laboring population so that they shall use formidable powers, of which they have so lately become fully conscious, without feeling prompted to abuse them, even under the stress of seeming interest, even under the excitements of passion, even under the seductions of demagogues and professional agitators, it would be altogether marvelous if so short a period should have sufficed for so great a work.

In addition to the grave inherent difficulties attendant on the use of the now well-recognized agencies of the trade-union and the strike, the industrial situation has been greatly complicated during the past two or three years by the sudden introduction into the field of controversy of two most formidable agencies, the Boycott and the general confederation of trade-unions under the title Knights of Labor. This it, immediately, is that has created that tremendous turmoil, which to many seems to presage universal industrial anarchy. The arming of the laboring class with these weapons has at the same time increased their power of doing mischief and excited a spirit of restiveness, and even of aggressiveness, never before known. That much evil will not in the first instance be done by the reckless, irresponsible and even wanton use of these new powers, it would be puerile to expect. Those who doubt that

the laboring class will, later or sooner, after more or less injury to themselves and to the commercial and industrial system, either discard these formidable weapons, or learn to handle them without suffering or doing mischief, have less faith in popular intelligence and public virtue than befits the citizens of a free government.

I have said that the immediate cause of the unprecedented labor troubles during the past two or three years has been the invention of certain new and formidable weapons of industrial warfare. The primary cause, however, is to be found, as I am disposed to believe, in the great advances which of late have been made in the condition of the laboring class. It is, of course, the way of the labor orators and the labor press to speak of the recent strikes as the revolt of down-trodden and suffering masses: as due to hardships and indignities which manhood could no longer bear. As a matter of indisputable fact these strikes have not proceeded from the least, but from the most fortunate portion of the working population. It has not been common, but skilled labor that has been concerned. It has not been hopeless misery, but growing ambition which has prompted nearly all the demands which it has been sought to enforce by the last resort. Not the bare necessities or decencies of life, but comfort and enjoyment and opportunities for social improvement have been involved. The strikers of the past two years have, as a rule, been those who were already receiving wages far above the average of the population.

And it has largely been for this reason, viz.: because of their comparative prosperity, that they have become so confident of their ability to wrest a still

larger share of the product of industry. The gain they have already realized has in part been due to more favorable material conditions of existence, to the discovery of new resources and powers in nature, and to advances in the arts of production and transportation; in part, also, to the social movement of the age, in which all classes have in a greater or less degree shared; in part it may have been obtained at the expense of unorganized labor and of the agricultural population: much, also, unquestionably has been the result of the more active and aggressive pursuit of their interests by the organized working class.

That this last part of the total effect should be exaggerated, and that laborers should attribute all, or nearly all, of what they have gained to their own efforts is not unnatural, nor is it strange that they look to the same course for further good to themselves.

It is idle for any one to say that the working classes have, indeed, accomplished much for themselves by their combined efforts in the past, but that we have now reached the industrial stage when nothing more is to be expected from this source, and laborers should, therefore, rest content with what they have already won. No living man knows enough of the conditions of industry to justify him in asserting anything like this; but it seems to me that the expectations of the body of laborers, at least if we can trust to the expressions of their organs and orators, have become so exaggerated, and the interpretation which they place upon the success attained in the past is so far strained or false, as to make it probable that large bodies of working men in different parts of our country will

have to sustain some very severe and distressing rebuffs, defeats, and losses, in conflicts with the employing class, before they will learn the proper limits within which they may seek to enforce further demands for diminished time and enhanced wages; before they will come to appreciate the very close and stringent restrictions which nature has placed upon the remuneration of human labor. Many of those who profess to speak for the working classes, and in turn to instruct them as to their rights and interests, are now talking as if the sole reason why the body of laborers have made advances in the past has been because they have enforced demands by united action, and as if the only requisite for the concession of any claim they may be disposed to make in the future, will be unfaltering persistence. Ideas like these will be found as pernicious as they are false; and if the very large amount of talk of this sort now indulged in by the labor press and labor agitators means that those who control the course of labor organizations really entertain such wild notions, there is a great deal of misery in store for the masses whom they are thus misleading.

There never has been an advance of wages or an improvement in the conditions of labor for which a sound and sufficient reason of a purely economic character did not at the time and in the place exist. If on any occasion laborers have received more wages for the same work, or the same wages for a shorter day, and have enjoyed this gain without a subsequent reaction to their more than proportional loss and injury, it has been, not because the workmen themselves desired this; not even because they needed it most painfully and pitifully; not because sentimen-

talists and philanthropists yearned for it on their account; not because the demand was enforced by united action, carried to a point which threatened the employers with loss or, perhaps, ruin; but it has been for the reason that the conditions of production and trade allowed such concessions to be made without impairing the disposition to accumulate capital for industrial uses, and without cutting to the quick into the profits of business, which, under the existing organization of industry, constitute the sole motive to the production of wealth. Where these conditions are met the urgent, persistent demands of the laboring class, as well as the active sympathy of the general community, will undoubtedly help to secure, if, indeed, they are not essential to securing advantages which might otherwise be withheld. Where these conditions are not met, demands for increasing wages or shortening the term of labor will either be refused by the employing class, or if enforced by united action under circumstances which compel an immediate compliance, they will be granted, in the given time and place, only at the cost of the general community, and in especial of the laboring class, first of all, last of all, and most of all.

The part which laborers are, under modern conditions, called to perform in influencing the distribution of the product of industry, is not a part in which they are to do whatever is agreeable to themselves, without careful consideration of the rights and interests of others, and without direct responsibility for the effects of wrongful and injudicious action. It is just as fully true that there are no industrial rights without corresponding duties as it is that there are no political rights without corresponding duties.

In the industrial republic, as in the political republic, power comes to the masses accompanied by the gravest responsibilities, and in one as in the other the abuse or the wanton exercise of power will inflict its worst injuries upon the humblest members of the community. In either republic instruction as to the duties and responsibilities of citizenship is more needed than instruction as to the right and powers of citizenship. Certainly during the past few years there has been much more thought of the latter than of the former among those who assume to promote the interests of the laboring class: yet nothing could be more prejudicial to those interests, when rightly viewed, than that the impression should be created among the body of working men that there is anything they can take without giving its fair and full equivalent: that they can use the immense force which resides in concerted action without direct and immediate accountability for every injury which may be inflicted thereby upon production and trade: that they can harass employers by incessant demands, extort undue concessions, and render it unsafe to undertake contracts, involving large expenditures extending over considerable periods of time, without in the result suffering far more evil than they can possibly inflict upon the employing or the capitalist class. Emphatically it is true in industrial warfare, that they who take the sword shall perish by the sword, and those are only enemies of the working classes who incite them to take up arms in a light quarrel, or, in any cause, without counting well and carefully the cost.

Such and so grave are the responsibilities which attend all efforts of the laboring classes to improve

their own economic condition through concert and combination. They constitute no reason why such efforts should not for a sufficient cause and in a clear case be made, but they render imperative the requirement of prudence, conservatism, and the utmost exercise of the spirit of fairness, courtesy, and conciliation. For one I have great confidence in the good sense and good temper of the American people, whether in dealing with the difficult problems of their political life, or in dealing with the problems, fast becoming even more intricate and complicated, of their industrial life. It is not like an American to persist in unreasonable demands, to require the brutal demonstration of complete defeat and exhaustion of resources before retiring from a contest that should not have been joined, or to use violence and rudeness in overbearing competition and lawful antagonism. An American has not pleasure, but pain, in the cessation of industry, in loss of time, in motionless machinery; while the wrecking of wealth, which has been created to serve human uses, outrages every sensibility of this eminently constructive animal. Nor in vain have our people for generations been endowed with the franchise and invited to the discussion and decision of public questions. Their political experiences have afforded them not a little economic education, no slight preparation and training for the important part they are called to perform in effecting an equitable and beneficial distribution of the product of industry. The ordinary American can be reasoned with, and that not on a low plane only. He is capable of understanding and appreciating almost any consideration relating to the factory or the market which his employer may have occasion

to adduce. His spirit is that of civility, reciprocity, and fair play. He intelligently and cordially accepts, in its full economic bearing, the maxim "live and let live."

But the problem is not allowed to remain as simple as it would be with a population all of this character. More, even, than our political situation, has our industrial situation been complicated by the accession of millions of laborers, born in distant lands, bred under other institutions, breathing a different spirit, and, by just the degree of that difference, less prepared to use without abuse the power wielded by organized labor. On this point I propose to speak with the utmost frankness. The matter is one of vital importance to our peace and prosperity.

No one can have carefully observed the developments of the past year or two years without becoming aware that a part so large that it may fairly be called the whole of those violent and reckless attacks upon production and transportation which have shocked the industrial system, and have come near to producing a general crisis of trade, have proceeded from the foreign elements of our population.

I do not assert that all or the larger part of our adopted citizens have joined in or sympathized with those movements. On the contrary, much that is of the best in our political and physical character has come from abroad; while the great majority of immigrants into the United States, even since the war, have shown marvelous aptitudes for our modes of life, an active sympathy with the prevailing spirit and temper of our people, a cheerful readiness to submit to the conditions under which alone free government and popular initiative can be long sustained,

an honorable eagerness to find and keep a place where they might both get good and do good, in the political, social and industrial order.

But no one can have failed to notice that, in the frightfully accelerated immigration of the past few years, there is not only an increasing number but an increasing proportion of those who come to us, largely from countries which have only recently attained importance upon the passenger lists of our ocean steamers, with a spirit and temper which is not only hostile to our political institutions, but which at once and inevitably introduces into the relations of employer and employed a rudeness, savagery and insolence to which trade and production will not submit.

These men, if one may judge from their actions, do not purpose to give as well as take, to live and, also, let live; they show no sense of the responsibility under which the powers they find put into their hands are to be exercised; they know no measure for their demands, and make little reserve as to the methods by which they seek to enforce those demands.

Such a spirit and temper, introduced, it may almost literally be said, for the first time into American industry, has already done vast and far-reaching injury to society, and now menaces us with even graver evils. The correctness of this explanation of our recent labor troubles cannot be gainsaid. Whether among the freight handlers of New York, or among the operatives of the coal and iron districts of New Jersey, Pennsylvania and Ohio, or among the railroad employés of the West and South west, those who have initiated measures intended forcibly to arrest the movements of production and transpor-

tation, and have carried these to extremes subversive of the general interest and even threatening the existence of society itself, have not been men born on our soil, bred under our laws and trained in our schools. Such movements may, here and there, have found native leaders, whose superior education and political training gave them influence over the inflamed masses of labor; but the force and impulse of these attacks upon social interests, and even upon society itself, has been of foreign derivation: while every out-break of violence which has accompanied the labor troubles of the last two years, whether in Chicago, or St. Louis, or at Rock Springs, has uniformly been characterized by the almost, if not altogether, complete absence of participants of native birth. In the atrocious assault upon the Chinese, which occurred at the last-mentioned place in the year 1885, in which nearly fifty unoffending persons lost their lives, it was ascertained that not one man born upon our soil was engaged.

It is not a matter of surprise, perhaps not altogether a matter of blame, that men reared under institutions of pure force, many of them bred in an atmosphere of conspiracy, cherishing traditions of political injustice, perhaps inheriting bitter hatred of law and government, at the best untrained in political action and unaccustomed to the responsibilities of citizenship, should exhibit less of self-control and of respect for the rights of others, than characterizes the conduct of our own people. But no feeling of sympathy toward the oppressed or unfortunate of other lands, no sentiment of hospitality toward those who have newly come among us, requires that Americans should permit their own

proper interests to be seriously impaired, much less, the peace and good order of the community to be endangered, by alien elements. I should be as far as any one from desiring the revival of proscriptive Know-nothingism; but I believe the full time has come for Americans to assert themselves against those who come into our land to trouble it; who create turmoil for no good reason: who agitate and distract industry with needless alarms and wanton attacks; and who pervert the bountiful privileges of our citizenship by a spirit and by methods which can only find excuse when employed against hereditary privilege and arbitrary power.

This is not a case where the better elements of society have no means of redress or self-defence. It will not be necessary to change the prescriptions or presumptions of our laws. It will only be needful that public sentiment should be fully aroused to the evils inflicted upon society and industry by the wanton and reckless proceedings which have characterized the past few years; that the body of fair-minded and well-disposed laborers should realize that these things are done to their hurt and loss; that sentimentalists and philanthropists should refrain from holding out expectations of economic benefits impossible to be realized under the hard conditions of human existence; that the press should cease to greet every fresh demand for higher wages or fewer hours of work as being presumptively right, instead of being a matter for close scrutiny, careful deliberation, courteous debate and judicial determination; that timid or time-serving magistrates should be braced up by public opinion to protect every citizen in his right to labor when and

where he pleases, in whatever avocation, for whatever employer and on whatever terms he may individually choose.

Given only these conditions, which are no more than we have a right to expect from the good sense of our own people, when once the evil effects of recent courses shall come to be fully appreciated, we shall have no more instances of tens of thousands of workmen dragged by force or threats into contests in which they have no interest, and which their own judgment and temper render distasteful: no more instances of violent hands laid on the throat of the social organism, in attempts to arrest the whole movement of production, and to wreck the machinery of transportation, of which all have equal need and in which all have equal rights: no more instances of large districts forcibly deprived of the necessities of life, of the commerce of the nation laid under a lawless embargo, of great cities threatened with darkness, riot and pillage in the name of struggling labor.

For one, I firmly believe, that the boycott will disappear as suddenly as it of late appeared, condemned not less by public sentiment than by law, as unfair, unjust and mischievous, the proper tool of malice only, a weapon not needed for any legitimate purpose of society.

The future of the remarkable movement to supersede trade-unions by a general confederation of the workmen of all trades and of all sections, under highly concentrated and centralized authority, I shall not undertake to predict. It is conceivable that such an organization might become a great educational force, a useful agency for directing the legitimate

efforts of laborers of the several sections and trades of the country towards the improvement of their condition: a source of much inspiration, through the deliberations and debates of earnest men representing the better sense and higher purposes of vast bodies of laborers who are, in the main, right-minded, honest, and patriotic.

Nor is it fair, nor is it worthy of any thinker or scholar, to attribute to essential vices in such a scheme the mistakes, errors, and follies hardly separable from the beginnings of so great and wide-reaching an enterprise. Tried by such a test free government itself was once pronounced a failure.

But I cannot conceal my conviction that the attempt to embrace so much within the sway of any human authority; to legislate in detail for so many conflicting interests: to cover with any single rule conditions of life and labor so widely diverse as those of city and country, of east and west, of agriculturist and artizan, of common and skilled labor, will inevitably result in failure. The restiveness shown by many of the trade-unions, the open revolt in some cases, already intimate the weakness of the scheme, if it is to be administered in the masterful spirit of the past two years.

Whether the organization known as the Knights of Labor is to break up in a general insurrection of its constituent members; or is to lapse into "an innocuous desuetude," relinquishing to the trade-unions their former authority over their own members, retaining for itself but the shadow of the name; or is to take on a form and assume functions compatible with industrial peace and with the steady and even progress of trade and production, will depend some-

what upon the wisdom of those who have come, almost adventitiously, into possession of the vast powers which that organization now wields, but will be mainly determined by the good sense and good feeling of the whole American people when fully aroused by the issue thus presented to our industrial life.

MINE LABOR IN THE HOCKING VALLEY.

BY EDWARD W. BEMIS.

Paper read at Second Annual Meeting of the American Economic Association,
in Boston, May 23, 1887.

This paper does not claim to give an exhaustive treatment of the subject, but merely to present such facts as particularly impressed themselves upon the writer during a recent visit to the mines of the Hocking Valley. The economic conditions here described are, however, in large measure, common to all the mining districts of Ohio and Pennsylvania.

These bituminous coal mines, several score in number, employed in 1886 4,500 men in Southeastern Ohio, scattered for perhaps twenty miles along the Hocking river, and for as great a distance in either direction north and south. The 109 mines of the district had an output that year of 2,498,000 tons.

A stranger familiar with the history of this valley, famous for the bitterest strike in the entire mining industry of America, and for the terrible destitution resulting therefrom in the prolonged struggle of 1884, when even presidential candidates feared to be thought involved, is struck at once on entering this part of Ohio with the remarkable harmony and good feeling now prevailing between operators and miners. For a year and a half this sentiment has been growing until now both parties appear fully convinced

that all differences can and will be settled by peaceful arbitration between strong organizations of laborers and of employers.

Let us first consider briefly the history of this important movement. After the great strike of 1884 had been temporarily settled by the surrender of the miners who obtained only forty to fifty cents a ton for their labor, the miners' unions of several states called a national convention, which met at Indianapolis, September, 1885, to devise measures for preventing in future industrial war. A committee was appointed which invited the operators to a conference in Chicago the following month. Both miners and operators in Ohio, Indiana, Illinois and Pennsylvania sent representatives to this, said to be the first conference among coal workers in this country, where employer and employé met as such in convention. But not enough representatives of the two hitherto warring interests were present to justify action, and another convention was called to meet at Pittsburgh in December. The following were among the resolutions of these delegates which accompanied their invitation to all operators and miners to meet at Pittsburgh:

"The question of what the one should pay and the other receive in compensation can be best determined by friendly conferences, where intelligence and arbitration will take the place of the usual irrational and cruel methods of the past. It is evident that the general standard of reward for labor has sunk too low by reason of the reductions that have taken place during the past few years, and that miners generally are receiving inadequate compensation in an employment full of toil and danger.

"It is also equally true that the widespread depression of business, the overproduction of coal, and the consequent severe competition, have caused the capital invested in mines to yield little or no profitable returns. The constant reductions of wages that have lately

taken place have afforded no relief to capital, and, indeed, have but tended to increase its embarrassments. Any reduction in labor in any coal field usually necessitates and generates a corresponding reduction in every other competitive coal-field. If the price of labor in the United States was uniformly raised to the standard of three years ago the employers of labor would occupy toward each other the same relative position in point of competition as at present. Such an advance would prove beneficial to their interests, as it would materially help to remove the present general discontent of the miners in their employment. However, such a general advance cannot be made at the present time, from the fact that already contracts in many districts have been made between the coal operators and their miners which will last till next spring; also that contracts have been entered into with manufacturers and large consumers of coal which will continue in force up to the same time.

"The committee would, therefore, suggest and invite that another meeting shall take place at Pittsburgh on December 15 next, where it is hoped there will be a full representation of the miners and mine owners throughout the various states and territories, and where permanent action may be taken looking to the improvement of both interests.

"The committee feels that this question of labor is one of vital importance, and that it must be met in a spirit of conciliation, and that the problems connected with it require studied thought that may lead to some wise and happy solution.

"This is the first movement of a national character in America taken with the intention of the establishment of labor conciliation, and while many practical difficulties may present themselves in retarding the attainment of the laudable end in view, it is hoped that at least an honest general effort shall be put forth by the operators and miners toward its accomplishment.

"The intelligence and progress of the age demand this. Our material interests demand it. Common justice demands it. The internal peace of our country demands it. Respect for the dignity of American labor demands it. The security of capital demands it."

The convention at Pittsburgh was representative in character, but it was deemed best to adjourn and meet at Columbus, Ohio, February, 1886, in order to give time for the joint convention of miners and operators in the several states to consider the scale of prices proposed at Pittsburgh.

February 23rd of last year a fairly representative body of all interests assembled at Columbus.

Meantime another strike had occurred in the Hocking Valley, and been settled January 7, 1886, by the famous decision in favor of the miners, where wages were advanced from fifty cents to sixty cents a ton, by Hon. A. G. Thurman, to whom the matter had been left by mutual agreement of both parties. The decision was thought unjust by the operators, but accepted with a readiness which did much to put their employés in good humor and heal the bitterness of past contest. As miners can dig from three to four-and-a-half tons a day, the above rate, from which a few cents are deducted for powder and oil, leaves the laborer from \$1.60 to \$2.50 a day.

Then came the Columbus convention. Chris. Evans, of New Straitsville, Ohio, president of the Coal Miners' National Federation, was unanimously chosen president, and Edward Burt, operator of La Salle, Illinois, secretary. All minor differences relative to company stores, hours of labor, time of payments, wages, check weighing, etc., were tacitly postponed, and by a vote of thirty-nine to one the convention approved the scale of wages for mining proposed at Pittsburgh, as follows:

Pittsburgh, 71 cents a ton. Streator, Illinois, 80 cents. Hocking Valley, 60 cents. Grape Creek, Illinois, 75 cents. Indiana Block, 80 cents. Mount Olive, 56½ cents. Indiana Bituminous, No. 1, 65 cents. Indiana Bituminous, No. 2, 75 cents. Wilmington, Illinois, 95 cents. Staunton, 56½ cents. Springfield, Illinois, 62½ cents. Des Moines, Iowa, 90 cents. Reynoldsville, Fairmount, 71 cents. Kanawha District, West Virginia, 75 cents.

A board of conciliation and arbitration, consisting of five miners and five operators-at-large, and one miner and one operator from each of the coal producing states represented in the convention, Pennsylvania, West Virginia, Ohio, Indiana and Illinois, was then elected by the convention, to which all questions of an inter-state or national character were to be submitted for arbitration. The miners and mine operators of each of the several states were also recommended to elect at an early date similar boards of arbitration and conciliation, to whom all questions of state importance should be referred for adjustment, and it was voted that another interstate convention should be held at Columbus a year later to make any needed revision in the scale of prices.

February 8-14 of this year, 1887, the second annual conference was held, and great, good feeling was found to have developed from the year's unusual experience of harmony. Chris. Evans, leader of the miners' union and secretary of the joint board of arbitration and conciliation, thus reported at this conference:

"This movement, inaugurated one year ago, has been instrumental in bringing about a much better feeling between miners and operators. Its influence has contributed largely toward the present improved conditions of the coal trade generally. We have been often told that the bitter feeling which existed between miners and operators could never be removed; that a restoration of confidence between us was impossible. In this, however, much progress has been made, and we trust that it will be enlarged upon. Miners and operators were present when this movement was inaugurated that have been engaged in some of the most bitter conflicts that were ever contested. Yet I feel proud to say that among them can be found some of the warmest supporters in the present movement. Local difficulties have taken place in many instances, but in a general way many troubles have been avoided that would otherwise have caused serious loss to both miners and operators. To prevent

a repetition of those grievances all representatives should act in a spirit of fairness toward each other, work with a conscientious determination to do what is right and just, and in the end no one will have any cause to regret that he has taken a part in substituting reason for brute force; in establishing friendly relations between the miner and his employer, and in helping to bring about one of the grandest reformations that has ever been known to the mining industry of our country."

Of this Columbus meeting John McBride, president of the Ohio Miners' Union, recently wrote as follows:

"The joint convention in Columbus . . . was a material improvement over that of one year ago, both in numbers and in the good feeling which prevailed throughout. The advance was not as great as we desired effected, yet it is much better than continual, indiscriminate fighting, with the loss and misery such methods usually bring to our craftsmen."

Although the coal operators of the Hocking Valley had thought that the advance to 60 cents a ton, or about \$2.00 a day for the average miner, granted by Mr. Thurman, would cripple them, they had found themselves the rather benefited, and agreed at this second Columbus convention that if the miners would organize in sufficient force to compel like concessions from all the large operators, they would, on the first of May, 1887, advance wages to sixty-five cents a ton and six months later to seventy cents a ton. As is well known the first advance was made at the time agreed by all the operators save those of Illinois. The latter have issued a protest, reciting the resolution of the Columbus convention, that the advance in wages should be conditional on the miners compelling most of the operators in all the districts to grant the same. The protest continues:

"We desire to put ourselves on record as being entirely willing to carry out our part of the agreement when said conditions are complied with, and as proof that we have from the beginning been in

hearty sympathy with the movement to combine harmoniously the interest of miners and operators, we refer to the fact that during mining year, from May 1, 1886, to May 1, 1887, we did pay the advance ordered by the Columbus Convention, February 8, 1886, notwithstanding the fact the scale was not complied with by the operators of Central and Southern Illinois; but on the contrary the miners accepted less per ton than was given before the adoption of the scale at Columbus. We now submit to all fair-minded men that a further advance on our part, until the Central and Southern Illinois operators are brought up to the Columbus scale, and the further advance of five cents per ton, is unreasonable and unjust, and in justice to ourselves and the interests we represent, we cannot and will not pay any advance until all the conditions of the resolution herein are fully complied with."

Under date of June 14, 1887, Chris. Evans, secretary of the Joint Board of Arbitration and Conciliation of Miners and Operators, writes:

"It is certainly through a lack of organization that those miners in Illinois are working below scale prices, although they are said to be organized in the Knights of Labor and belong to that organization. The operators of Ohio, Indiana and Pennsylvania were very anxious to see the advance paid in every state, and were willing to do anything reasonable in order to prevent a dissolution of the present method of adjusting prices, and all other questions that so often create trouble between miners and operators. From present indications the five cents advance will not be obtained in Illinois."

In April it was my privilege to visit several of these Hocking Valley mines, and to converse with miners, operators, storekeepers and citizens. On all sides was heard nothing but praise of the working of this system of arbitration and conciliation.

Said one operator:

"My views have completely changed. Formerly I thought it was wise to pay as low wages as possible in order to sell my coal at a low price. Now we find we can do better by paying sixty and sixty-five cents than formerly when paying fifty to fifty-five cents; for we are sure of being able to fulfill our contracts without fear of having our margin of profits swept away by a sudden strike of the men. We can, therefore, take larger orders than formerly and

make more thorough paying higher wages. I recently obtained a contract to furnish a company 60,000 tons of coal. Three years ago I would not have dared to let my men know of it. Now one of the first things I did was to tell them about it and we rejoiced together over our common good fortune."

Another large operator who had just obtained an order for 300,000 tons of coal made no secret of it, and remarked, that before this era of conciliation and strong organizations on either side to enforce agreements, he would not have dared to take so large a contract or at so low a price.

Operators who fought the miners most bitterly in 1884 and 1885, now acknowledge their mistake, and admit that the inestimable benefits of the present system of arbitration in Ohio were only made possible by the organization of the laborers.

At one mine visited, several miles from any town, the proprietor said that this arbitration had brought such immunity from strikes that he now was assisting his men to own their own homes. Hitherto he had retained the ownership of all the houses of his workmen in order to have greater control over them in case of a threatened strike.

The fact that the organization of the miners has led to the counter organization of the operators renders it much easier than formerly to adopt and adhere to a schedule of prices to the consumer, while at the same time bituminous coal is too widely scattered and too easily mined to allow of such large profits as those of the anthracite coal pool.

An evil often complained of elsewhere seems to have been largely removed here. To insure the honest weighing of the product on which each miner is paid, the men are allowed to keep at the scales a check-weighman of their own selection.

Thus far we have presented the bright side of the picture. Is there then no dark side in a valley recently so famous for its sufferings? Unfortunately, there is. Of 2,864 miners in the Hocking Valley, and other parts of the state, working for the 104 operators that made full returns to the Ohio Bureau of Labor Statistics for 1885, a year when strikes were not especially numerous or prolonged, 1,553 or 54 per cent. worked in all 221,831 days, or an average of 143 days for the year, being only 12 days a month or $2\frac{3}{4}$ days a week; while 34 per cent. more, 987 in all, working in each case between 200 and 250 days, did 225,841 days' work, being an average of 229 days, *i. e.*, 19 days a month or $4\frac{1}{2}$ days a week. Only 12 per cent. worked more than 250 days in the year. The results of such idleness in extreme poverty and demoralization among many are easily traced and can scarcely be realized.

When miners only get work at from \$2.00 to \$2.50 a day for 11 days a month, as was the case during March in one of the largest mines visited, what wonder that the miners are poor and ignorant and sometimes desperate? The 139 miners making returns to the Ohio Bureau of Labor Statistics in 1885 reported their average year's earnings as only \$343.02 or \$6.60 a week; while the inside and outside day laborers and the mule drivers average still less. If we suppose an average of $2\frac{1}{2}$ persons—an unusually low average, be it remembered—to be supported by this \$343.02, the amount of expenditure possible for each person was only \$137.41, or \$7.54 less than the average expenditure in all the prisons and asylums of Ohio, with their 30,040 inmates, where there are certainly few luxuries and where the economies of

wholesale buying and of cooking without waste can be practiced.

A superintendent of schools in one of the thriving towns of this beautiful Hocking Valley informed me of cases where mothers confessed with tears in their eyes that they were forced to keep their children from school in order to wash their only garments. Of course, all are not so badly off, and some have accumulated property, but the deplorable results of idleness in a region where the women, fortunately perhaps, cannot assist much in earning, and where the men cannot easily find other work during their irregularly recurring days of idleness, are acknowledged by all. It was the general verdict that there was most drinking during these seasons of idleness.

What is the reason for such lack of work? Now that strikes are no more, can it be that the miners take contracts in small amounts for such immediate delivery, that perpetually recurring seasons, almost every month, of activity and depression are inevitable? This may sometimes be the case, but large operators informed the writer that much of their work was in filling large contracts at so many tons a month for months in succession.

One reason remains which was quite generally accepted by all those to whom the subject was broached, and many volunteered this as the most potent factor of the problem. A large portion of the operators of the Valley run company stores for the sale to the men of almost everything they will be likely to want. Whether or not these stores charge more than other retail stores may be an open question with some, though there is very little doubt in the mind of the writer, or of those with whom he

conversed, but, certain it is, these stores make a good profit for their owners or they would not be sustained.

President McBride, of the Ohio Miners' Association, says that one operator recently acknowledged to him that on a mining plant of \$8,000, he had made in thirteen months a profit of only \$287, but as a result of owning the mine he had made \$22,000 net profits out of his pluck-me-store, whose capital was less than \$5,000, or \$22,287 clear profit in thirteen months on \$13,000 of capital. The operator added, says the report in *Work and Wages* for May, "that many mines could be run at net cost, if for no other purpose than to provide customers for the stores where the better investment can be found."

At nearly all the mines the miners are under a well-understood though unwritten obligation to trade at the company store if they expect to long retain their situation. It therefore becomes the interest of the operators to employ more than the number of men necessary to fill their contracts, provided they worked steadily during most of each month. Instead, as many men will be engaged as can be induced to stay about the mine in order thereby to secure their trade in the company stores, and thus add to the profits of the company without at all injuring the profitability of the mine itself. That there is a connection, and a close one too, between these company stores and the congestion of labor about the mines, seems evident, even if we admit that there are also other factors in the problem. It may easily be said that miners are not obliged to stay where the labor market is so overcrowded. But engulfed in an ignorance and poverty for which these men are not wholly responsible, they are almost certain to accept

the conditions of employment about them, rather than flee to other ills they know not of. If the company stores were abolished, and greater regularity and constancy of work thereby secured to part of the population, the rest would then be forced to leave the mines to their own ultimate advantage and that of the community.

Despite the prohibition of law, many of these stores have continued to circulate script and store orders for small sums, which sometimes circulate freely and yet often depreciate to the loss of the innocent holder. One large operator who was removing to another mine, and had sold his store in consequence, and was redeeming his script and store orders, acknowledged to the writer, at first, evidently, without intending to, and afterwards with a request that his name be kept secret, that these store orders, issued originally to the miners for full value received, he was now endeavoring, often successfully, to redeem at a discount! Words fail to express one's detestation of such action.

Evidently there is need of a strong and intelligent public sentiment in this matter of company stores. There may be much excuse for them in mines remote from any town, but this is rarely the case in Ohio.

The extent to which children are employed in the mines was not learned. Competent authorities living on the spot stated that the operatives did not directly seek to employ boys, but that parents, finding that, because of the mass of men about the mines, they could get work but about half the time, would feel the necessity, when the mine was open, of utilizing every muscle in the family, and would go to the operators and beg, often successfully, that their boys

might be allowed to help them in the mine. To avoid the law, the boys were not hired directly, but the parents received higher wages because of the greater resulting out-put.

Payment being made by the month instead of the week, most of the miners buy on credit, and, in consequence, buy with all the recklessness usual to such trading. Trusting is a great incitement to the imagination.

Although the schools of the mining towns are probably as good as in towns generally of their size, one startling fact was observed. In a school-room containing all the pupils of a certain grade, and about thirteen years of age, there were present on the day of my visit thirty girls and only seven boys. In another room of pupils, ten years of age, there were counted thirty-one girls and six boys. The enrollment was thirty-four girls and only eighteen boys. Where were the rest of the boys? There was no special reason for their absence, and a similar ratio was observed in all the rooms visited. The boys were on the street or in the mines, fit training places indeed for our future citizens, now but ten and twelve years of age. In fact, not only in the Hocking Valley, but in almost all sections of our Union, with a few notable exceptions, like Massachusetts, our compulsory education laws are a farce. No one is specially paid to enforce them, and public sentiment seems nearly dead, though of late, a little more aroused in some places as to the importance of compulsory education, intellectual, civic and industrial, as the necessary prerequisite of all enduring social reforms.

The need of industrial training among the miners

of the Hocking Valley, particularly in cooking, was very evident in view of the excessive waste observed. The testimony of others on the subject confirms this, while the need of that general education which should enable the miners to find out where and how they might improve their condition, is equally plain. There should be some encouragement to save, through postal savings banks or other agencies, by means of which a greater independence might be secured to the men, and better places of employment might be reached when desired. Certainly the study of these needs, and how to meet them, and a thorough awakening of public sentiment upon their importance, might well occupy the energies of all lovers of their fellow-men.

Though the latter part of this paper has been as dark as the first was bright, there is no occasion for despair. It is the general testimony of old residents of the mining district, especially considered above, that in no respect is the condition worse than three years ago, and in many respects it is better. What has already been gained gives promise of still further improvement.

The kindly demeanor toward the miners of some of the operators was noticeable. One of the latter was observed carrying with him to his mine twelve miles from home, a bundle containing lettuce as an unexpected gift to the sick wife of one of his miners. "I love to surprise my men this way," he remarked, as he turned to enter the unpainted, though comfortable cottage, and speak a word of cheer at the bedside. As he came out, and in reply to some question, he remarked, "I don't hesitate at all, when detained at the mine, to go in and take dinner with any of my

men; they buy as good meat as I do at home, and they appreciate my stopping."

As long as such men control even a few of our industries, and it is believed their number is both larger than many suppose and is increasing, there is reason to look hopefully toward a happy and wise solution of our social problems.

To bring the above account up to date, June, 1888, it should be added that the seventy cent rate was paid in the Hocking Valley, and corresponding rates elsewhere save in Illinois, from November 1, 1887 to May 1, 1888. At the joint conference of miners and operators of Indiana, Ohio and Western Pennsylvania, held at Pittsburgh, February 7 to 9, 1888, when 146 mining companies were represented, and 85 men were present from the miners' organizations, it was agreed to pay the following wages per ton for the ensuing year :

	May 1 to November 1, 1888.	November 1, 1888 to May 1, 1889.
Hocking.....	65 cts.	70 cts.
Pittsburgh District.....	74 "	79 "
Reynoldsville and Fairmount.....	70 "	75 "
Indiana block.....	85 "	90 "
Indiana bituminous.....	70 "	75 "

The *verbatim* report of this last conference, covering ninety-five closely printed pages, and obtainable of H. A. Bischoff, Home Insurance Building, Chicago, is most interesting. The deliberations therein reported abound in evidence of the good sense of the delegates, and of the excellent results of this method of substituting peaceful conference and agreement for bitter industrial war.

Colonel S. N. Yeoman, an operator of Island City, Indiana, and President of the Joint State Arbitration and Conciliation Board of Indiana, thus clearly presented the fundamental idea of the movement: "As stated in our first convention and reiterated there, it really did not make much difference to us as coal operators what we paid for mining, provided we compelled our competitors to pay equally as high prices. We started on that basis. We all recognize that the strikes in the past were brought about mainly by reason of some particular district having an advantage over others—some particular operator cutting down the prices of labor in their particular districts, thus forcing, from necessity, those who had to compete with them to reduce the prices of labor also to corresponding standards."

Secretary Evans, of the National Federation of Miners and Mine Laborers, writes under date of June 8, 1888: "You are correct on the company store question. They have not diminished much as yet, but after many years of lobbying at the State Legislature of Ohio, and after the continued agitation of our organization against these pluck-mes, we have succeeded in securing some good legislation on the subject, and have been instrumental in the passage of a law to enforce semi-monthly payments of wages."

He thus concludes: "The Hocking Valley struggle was a severe one for both miners and operators, and the lessons taught will remain with us as long as memory lasts. The actual suffering of the miners and their families is only known to those that suffered most, and the probabilities are that it will remain a mystery for all time to come. The operators, on the other hand, spent hundreds of thousands of dollars that will never be redeemed. But out of all this has grown a feeling of regard for each other that has surprised all alike. The intense bitter feelings that existed have been replaced by a more kindly interest for each others welfare, and at no time in the history of coal mining can be found a more friendly feeling between miners and operators than is at present manifested by not only the miners and operators of the Hocking Valley, but in all States that have taken an interest in the movement inaugurated by the National Federation at Indianapolis and that are working under the federated principles jointly agreed to between miners and operators."

The whole history of this movement of the soft coal miners and operators, so significant and yet so little known by the rest of the country, is full of proofs of the value of some at least of our much-abused and often, to be sure, justly condemned labor organizations.

Proceedings of the Second Annual Meeting
OF
THE AMERICAN ECONOMIC ASSOCIATION,
BOSTON AND CAMBRIDGE.

May 21-25, 1887.

BY RICHARD T. ELY, SECRETARY AMERICAN ECONOMIC ASSOCIATION.

SATURDAY, MAY 21.

The opening session of the meeting was held in Huntington Hall, Massachusetts Institute of Technology, on Saturday at 8 P. M. It was a joint session of the American Economic Association and the American Historical Association, with address by the presidents of the two Associations. The address of President Walker forms a part of this monograph. That of President Justin Winsor was entitled "Manuscript Sources of American History," and is published in the volume of Proceedings of the Fourth Annual Meeting of the American Historical Association.

After the addresses were read both Associations attended a reception in the Museum of Fine Arts, given by the trustees of that institution.

SUNDAY, MAY 22.

Professor Winsor received members of both Associations at his home, in Cambridge, from 4 to 7 P. M., after which an opportunity was given for such as wished, to attend the customary services in the College Chapel, where the Rev. Phillips Brooks, D. D., preached.

MONDAY, MAY 23.

Morning Session.—Huntington Hall, 10 A. M.

Report of the Standing Committee on Transportation, consisting of

Chairman.—E. J. JAMES,
RICHMOND SMITH,
LYMAN ABBOTT.

Honorary Members.

SIMON STERNE,
CHARLES FRANCIS ADAMS, JR.,
ALBERT FINK,
JUDGE THOMAS M. COOLEY,
SENATOR ALDRICH,
SENATOR REAGAN,
SENATOR CULLOM,
J. F. HUDSON.

I. Abstract of Report of Committee by Chairman. By PROFESSOR E. J. JAMES.

The report stated that while the committee had received many responses of interest, yet the fixing of the date of the meeting so early prevented their making as substantial contribution as had been intended. The subject of transportation was one of the most important in the whole field of economic investigation, and its development to any large extent depends absolutely on the action of government. No railroad could be built without the exer-

cise of the right of eminent domain. The capital necessary for its construction could never be collected without the creation of a corporation. The social, economic and political significance of this problem will be greater in the future than now, and both those who believe in extending the functions of government, and those who believe in limiting them, can unite in an earnest investigation of the relation of government to transportation. The outline of an investigation by Professor Jenks was given at the end of the report.

II. Abstract of paper on the "Agitation for Federal Regulation of the Railways." By PROFESSOR E. J. JAMES.

After noting the strong tendency of the Federal government to extend its functions, as especially illustrated in the case of railroads, Professor James pointed out the rapid growth of evils and abuses in the management of railroads in the shape of high and arbitrary charges, unjust discriminations, special privileges, watered stock, and a general disregard of the rights of the public. There was no hope of correction through competition, and state regulation was ineffective; and so, about twenty years ago, there began a movement in favor of action by the Federal government. The two great steps in this agitation were the Windom report of 1873 and the Cullom report of 1886. The committee making the first report still believed in the power of competition to check abuses; and this competition was to be provided by the development of a system of water-ways, and the construction of independent lines of railroads by the government, to be operated like canals in the regulation of rates. In the second report the

committee drew an indictment against the railroads, the substantial truth of which is generally admitted by the railroad managers themselves. While the bill passed is not an ideal one, yet it is a step to something better, and puts us in a more favorable position to solve some of the problems of the question than any other government now considering the matter. Tables covering sixteen years were given to show the enormous rate of increase of railroad traffic as compared with canals. The decisions of the courts were quoted to show the unconstitutionality of complete regulation by the states, while there were not sufficient data to show that our system was the best in the world. The importance of canals in a system of transportation was emphasized, and opinions were quoted to show what influence they exercise on rates in this country. The chief features of the bill were pointed out, and the paper closed with extracts from two speeches in the United States Senate against the constitutionality of the measure.

III. Abstract of paper on the "Long and Short Haul Clauses of the Federal Railway Law." By DR. EDWIN R. A. SELIGMAN.¹

Professor Seligman stated that the discussion of railroad tariffs centered in the question of the principle to be applied. The cost-of-service and the value-of-service doctrine were touched on, and the two fundamental principles of classification and discrimination noted.

Discrimination was defined, and personal discriminations were shown to be indefensible on any theory.

¹The paper was printed in full in *Political Science Quarterly*, Vol. II., No. 2, June, 1887. It has also appeared in book form with a number of other essays, under the title "Railway Tariffs and the Interstate Commerce Law," Ginn & Co., 1887.

Local discriminations, on the other hand, may arise in two ways—through the desire of a railway to develop its traffic, or through the action of competitive centers.

From the public standpoint, the great principle of equality of treatment for all persons or places must be demanded, while the principle of value must be viewed as a legitimate qualification of this general rule.

The question was then discussed, how far local discrimination is permissible. It was shown that no theory of value could require one shipment to be charged unduly high rates in order to transport another shipment at less than actual cost. But the short-haul principle, or making a higher aggregate charge for the short haul than for the longer haul, was shown to be legitimate in certain cases.

The short-haul laws of all European countries were examined, and the conclusion was that the principle of charging what the traffic will bear is the only rational method, but that the possibility of abuse of power requires the interposition of public authority. The public authority must lay down the rule of equal treatment as the fundamental doctrine. The short-haul clause of the Federal law is a partial recognition of the demand for equal treatment; the discretion given the commission is implicitly a partial recognition of the theory of value. The Interstate Commerce Act thus accepts the principle and concedes its limitations. But its success depends on the discretion of the commissioners.

IV. Abstract of paper on "Some Curious Phases of the Railway question in Europe. By SIMON STERNE, Esq.¹

Mr. Sterne pointed out the difference of knowledge possessed by the two classes of learned men: by the students who get theirs from books and documents, and by the practical men who get theirs from direct contact with affairs. It is necessary to go below the sources of information that the book student uses in order to get at a true understanding of some phases of the railway question in Europe. Mr. Hadley, who got his information second-hand from government reports and documents, had found that the cause of Austria's failure in her system of railways was mainly due to the importance of the Danube as a competing factor, while the real reason was financial necessity. The work of the Italian commission of 1878-1881, as described by Mr. Hadley, is given at some length, and here again he is shown to have been misled when he believes that Italy deliberately abandoned state ownership for private control as more profitable and advantageous to the people of the country, while the real determining factor in bringing about the change was financial distress. The necessities and abuses of the state management of railways in Italy were pointed out and summarized. In Prussia the theme of the paper is illustrated in two motives for assumption of control by the state: the providing of places for the old officers of the army, to make way for a reform in that service, and the acquirement of an instrument for promoting protective tariff legislation. France furnishes another illustration of the multiform and various influences

¹This paper was printed in full in the *Quarterly Journal of Economics* for July, 1887.

at work to modify and change the conditions of the railway problem.

V. Discussion of the Report and Papers.

The secretary read the following rules relating to discussions which had been approved by the Council:

RULES.

1. Members of the Association will be recognized, upon rising, by the chair.
2. Persons, not members, wishing to take part in the discussion, are requested to forward their names in writing to the chair.
3. No speaker shall exceed five minutes in debate. Members may be granted an extension of time by a majority vote, and others by unanimous consent.

At the suggestion of President Walker, Professor Arthur T. Hadley, of Yale University, was invited to open the discussion, and by unanimous consent the time limit was suspended.

Professor Hadley said that Mr. Sterne's paper showed that state management had been bad in Italy. This was a fact. He considered it a strong argument against government ownership of railroads that a state can be put into straits and compelled to slaughter property. Those who would pack a commission, and instruct it in advance of testimony taken what kind of a report to bring in, were clearly unfit to manage one's property. He did not deny that state management was theoretically the best, but he held that the practical difficulties connected therewith were inseparable, at any rate in the United States.

Professor Ely said that while he was not prepared to advocate immediate state ownership in the United States, he felt obliged to take exceptions to Professor Hadley's style of argument. Professor Hadley and his friends say, "government management involves corruption, therefore, let us have private railroads." The conclusion did not follow. There was no absolutely perfect system. What was wanted was the relatively best system. Did private railroads involve no corruption of polities? He had lately been looking into the history of railroads in Pennsylvania, and did not see that the transfer of the state railroads to private corporations had at all purified polities. He denied further the assumed superiority of our roads, and, in particular, pointed to the slow rate of travel on American railroads. Mr. Depew, President of the New York Central, had complained that the fastest train between two German cities made only twenty-five miles an hour. Professor Ely said, however, that between Pittsburgh and Buffalo there was not a single train which made even twenty-five miles an hour. President Depew complained because he was obliged to wait an hour at a railroad junction in Germany, but he (Professor Ely) had been obliged to wait a whole day in Ohio, and recently he had been obliged to wait nearly three hours at Harrisburg, Pennsylvania, in traveling from Baltimore to Buffalo.

Professor James called for Mr. Sterne, but he declined to speak, and called upon Mr. Edward Atkinson, who briefly addressed the meeting.

Mr. Atkinson said that he was glad to conclude, from Professor Seligman's paper, to the last part of which he had listened with pleasure, that the associa-

tion was opposed to restrictions on individual liberty; for his part he believed such evils as existed in the management of railroads could be removed without government interference.

Mr. Sterne said that he did not agree with Mr. Atkinson, for he (Mr. Sterne) held that the remonstrances of private individuals were not sufficient to remove railroad abuses, and he cited numerous instances of discrimination which had come under his notice, while he was conducting the investigation for the Hepburn Committee of the New York Legislature. On the other hand, Professor Hadley must not think that he favored government railroads in the United States. That would never do until our civil service was improved. However, the time for government railroads might come, and it was well to discuss the question.

Afternoon.

The afternoon was occupied by an excursion of the Historical and Economic Associations to Wellesley College, to attend a reception given to them by the faculty of that institution.

Evening Session—Huntington Hall, 8 P. M.

I. Abstract of Paper on the Sociological Character of Political Economy. By F. H. GIDDINGS, Esq.

Mr. Giddings's paper on the "Sociological Character of Political Economy" presented a conception of Political Economy as a science of organic phenomena. It undertook to show that economists can no longer start from the old conceptions of human nature and social institutions as fixed creations. The evolutionary

thought must be accepted, and the reactions of wealth-production and distribution upon men and institutions must be taken into account, if the economist would really understand the processes of production and distribution themselves. This would necessitate a new plan of the science, which was outlined. For the old departments of production, exchange, distribution and consumption were substituted the special branches—Descriptive Political Economy, Economic Physics, Economic Politics, Economic Biology, Psychology and Evolution. The social organism was shown to have two broadly contrasted modes of economic action; one being through individual efforts, variously combined, the other through the social self-consciousness expressing itself in public opinion and law. The science of the former mode is Economic Physics; that of the latter is Economic Politics, which includes all that has been called applied Political Economy.

- II. Paper on Mine Labor in the Hocking Valley. By DR. EDWARD W. BEMIS. This paper is part of the present Monograph.

TUESDAY, MAY 24.

Morning Session—Huntington Hall, 10 A. M.

- I. Report of Committee on Trade on “Condition and Organization of Retail Trade.” PROFESSOR JAMES H. CANFIELD, Chairman; PROFESSOR JESSE MACY, DR. ALBERT SHAW and PROFESSOR W. W. FOLWELL, Committee.

This preliminary report, on the condition and organization of retail trade, was a compilation of a large number of returns received in answer to circulars of inquiry sent to retailers, chiefly in Kansas, Iowa and Minnesota, covering eleven hundred and eighty-five retailers. The report shows:

That retailers are increasing (proportionately) four times as fast as the population.

That the average retailer knows very little of the general condition of his own branch of business.

That there is very little, if any, efficient organization among retailers.

That intelligent retailers are coming to understand and deplore this condition of affairs.

That competition tends constantly and strongly to mere unintelligent commercial cut-throatism.

That in food supplies competition tends constantly and strongly to adulteration and general inferiority; while in dry-goods and clothing the result is better quality and better workmanship. Boots and shoes and other branches are about equally divided in opinion as to the result of competition.

That compared with the capital invested, the volume of business is very large and the wages of superintendence very small.

That in the localities reporting, during five years fifteen per cent. of the retailers have failed, about seventeen per cent. have changed localities by removal, and twelve per cent. have withdrawn from business, leaving but about fifty-six per cent. that can be called stable.

That the more experienced dealers are settling down to a cash basis.

That the undue extension of credits and the consequent abuse of the credit system by both wholesalers in relation to retailers, and retailers in relation to their customers, is a large factor in the present disordered condition of the retail world.

There seems to be a strong tendency to avoid credits in buying and selling. Accounts settled at the

close of each month are generally called *cash* accounts. A suggestion is made that all laws for the collection of debts be abolished. This would be better worded as "laws for the enforcement of credits." In proportion to the amount of business done and credit extended, there are fewer collection suits than formerly. The great mercantile agencies make a specialty of protecting credits. It is thought if the whole credit system were considered as resting entirely on honor, the results would be in every way beneficial to both traders and the purchasing world. The committee has received several suggestions looking to this general result. The thought is worthy of very careful consideration. The assertion is made that the largest and most successful business firms in this country already proceed practically on this basis.

After the full report of this committee was read President Walker said that the field was so vast that no generalizations from such limited data as this committee had obtained were reliable.

Dr. Bemis spoke briefly on retail trade and coöperation, and Rev. J. G. Brooks and Mr. Geo. A. Denison and Professor Ely continued the discussion.

This discussion was followed by the second part of the program for the morning.

II. Report of Standing Committee on Public Finance on "Municipal Public Works." PROFESSOR HENRY C. ADAMS, Chairman; PROFESSOR ARTHUR YAGER, PROFESSOR GEORGE W. KNIGHT and DR. DAVIS R. DEWEY, Committee.

Professor Adams stated the difficulty the committee had met with in their investigations, through want of funds, and gave the title and aim of each of the five papers composing the report.

Professor Adams, after pointing out the distinction between the science of finance and the science of political economy, gave statistics as to gas in this country, its consumption, price, capital invested and dividends. A copy of the circular sent out to learn the attitude of cities to works of a *quasi-public* nature was given, and some of the methods of managing such works were named and criticised. It was shown in the paper that none of the theories to account for municipal management of water-works, and not of gas works, would stand the light of investigation. There was also a similar failure in the attempt to classify control by locality.

The paper of Dr. Davis R. Dewey, of the Massachusetts Institute of Technology, Boston, was devoted to a consideration of the different methods of obtaining revenue from street railroad companies by the municipality. Here the municipal financier is checked at every step by state statutes and even constitutional provisions. These were briefly reviewed, and then a summary of the taxing methods in force was given. The most interesting and exceptional ones are the requirement of a certain percentage of gross receipts and the sale of franchises. The former practice is found in Baltimore, Cincinnati, Mobile, and St. Louis. The city of Baltimore thus secures over \$100,000 a year for its park system. New Orleans regularly sells its railway franchises: in the past ten years it has thus received at least a million dollars. In line with this is the recent legislation of New York.

III. Discussion.

Dr. Ely remarked that Alexandria, Va., owned and successfully managed gas-works, and that larger

revenues ought to be derived by cities from natural monopolies. As to purchase of natural monopolies the question should be asked: What is a railroad or street car line worth without a franchise? Manifestly only the actual value of plant, and this alone should be paid for by a state or city. As the franchise proceeded from the public nothing should be paid for it.

Mr. Giddings remarked that one difficulty in transferring public works from private to public hands was that the question was always fought on the ground of abstract rights of property, and gave an illustration from what was then passing in the State House with reference to badly managed water-works which a town in western Massachusetts desired to acquire.

Professor Henry C. Adams moved the following amendment to the constitution, it having been approved by the Council: Amendment I (after Article VII).—“The Council may elect foreign economists of distinction, not exceeding twenty-five in number, honorary members of the Association. Each honorary member shall be entitled to receive all reports and publications of the Association.” The motion was seconded, and the amendment was unanimously approved by the meeting.

Afternoon Joint Session of the American Economic Association and the American Historical Association.

SANDERS' THEATRE, CAMBRIDGE, 3 P. M.

- I. Abstract of Paper on "Our Legal-Tender Decisions, a study in our Constitutional History," by PROF. E. J. JAMES, of the Wharton School, University of Pennsylvania.

The reasons for attaching so much interest to the legal-tender cases were briefly touched upon, and it was pointed out how they illustrate the great influence the executive and legislative branches may have on the attitude of the court towards constitutional questions. The different grounds for the decision of the court in the three cases that had come before them were emphasized. The rules for the interpretation of legal enactments by the courts were briefly given, especially as to the question of legislative intention, and the debate on the legal-tender clause in the constitutional convention was summarized. The opinions of jurists, commentators and statesmen were quoted and commented on. The results of the decision will probably be good, since it will teach us to rely on the education of the people in sound doctrines to guarantee a sound currency.

- II. "The Biography of a River and Harbor Bill," by DR. ALBERT BUSHNELL HART, of Harvard University. This paper is printed in the Proceedings of the American Historical Association.

- III. Abstract of paper on "The Study of Statistics in American Colleges," by COLONEL CARROLL D. WRIGHT, Commissioner U. S. Bureau of Labor Statistics.

The attention paid to the study of statistics in Europe was pointed out, and an outline of the courses offered in the different schools and universities. In

this country regular courses are offered in some institutions, and time was devoted to a study of the subject in others. The necessity for its study was insisted upon, and the phrase *theory of statistics* defined. The use of mathematical skill is demanded more and more in the handling of statistics. The three grand divisions of the science were laid down, and the importance of the colleges entering this field at an early date was emphasized. It should be a matter of the highest interest to the government to have men in its service trained in statistical science. None should be allowed to handle statistics except those who care more for truth than for their doctrines.

After the session in Sanders' Theatre the members of the two Associations, and ladies accompanying them, were received in No. 13, University Hall, by the Professors and Instructors in History and Political Economy of Harvard College.

Evening Session.—Huntington Hall, 8 P. M.

- I. Abstract of paper by FRANK J. GOODNOW, LL. B., on the "Administrative Aspect of Municipal Franchises and Finance in Europe and America."

After noting the two different classes of governmental functions, Professor Goodnow described in what two ways a central control can be exercised over localities. The powers of American cities are derived from their charters, and a brief summary of constitutional enactments show how far these powers extend in the management of works of a public character. For a special purpose a special act of permission has to be obtained from

the legislature. Through various municipal acts England has reached a mixed system, allowing certain enumerated powers to the municipalities, but reserving others for the approval of the state. Germany has adopted the system of administrative control, in which the localities have a wide freedom of action in local matters, but the executive officers of the state can forbid their acting unwisely or extravagantly. Very much the same system prevails in France. The extent to which the European municipalities have made use of their greater freedom of action was illustrated by facts and statistics.

II. Discussion.

Professor Ely remarked that in his capacity as member of the Maryland Tax Commission he had had occasion to look into the subjects of Professor Goodnow's paper, and that he entirely coincided with his conclusions. American cities did not have nearly so much liberty as European. He desired also to call attention to another fact, namely, that functions and expenses of cities were all over the world increasing faster than those of central governments, and that, relatively speaking at least, we were living in an age of increasing decentralization.

Professor James called attention to some of the good features of centralization, and said that the larger governments performed their functions better than the smaller.

Professor Johnston said that the increased importance of local governments could be seen in the increase in the strength of feeling for local independence. In the last century Federal interference to put down the whiskey insurrection in

western Pennsylvania was not regarded with the same abhorrence with which proposed Federal interference to put down the labor troubles in 1877 was viewed.

Professor E. Benj. Andrews of Brown University, remarks the necessity of distinguishing between the several senses of the word "centralization." It is certainly one form of centralization when states increase in size, bringing wider reaches of territory under a single sovereignty. In this sense the century past has confessedly been a period of extraordinary centralization. How true this is as regards the United States, every one is aware. But the same movement has been in progress in Chili, whose domain was enormously enlarged through her last war, and may be observed as well in the foreign conquests of Great Britain and France. Germany obtained in 1871, a solid general government for the first time in all history : and Italy, entire, is at last ruled again from a single centre, which has never been the case before since the great days of Justinian. The term "centralization" has another signification, which those who think the present so much an age of decentralization should not overlook, viz.: the strengthening, the increased life, energy and self-assertion of the central sovereignty as a sovereignty. In this sense centralization may wax more and more perfect at the very time when the number of functions performed by local authorities is increasing far more rapidly than the number of those performed by the national authority. And this, I conceive, is precisely what has been taking place in our own country. It is quite true, as gentlemen have said, that states and municipalities are now asserting themselves as never

before, and that the points at which they touch us are multiplying much more rapidly in number than those where the general government touches us. But the general government lays its hand upon us with a more authoritative sort of grasp, and its sovereignty, asserted at few points perhaps, is more certain, decided, unquestioned and clearly pronounced from year to year. But what is of more import than any of these distinctions, because so necessary and useful a corrective to crass thinking and common assertion, is that this very observable new emphasis of governmental function, whether general or particular, is not as Herbert Spencer would alarm us into believing, an abridgment of individual liberty. On the contrary, there never was a time when individual freedom had so full or free a play as now. Doubtless, community-action may become meddlesome,—indeed we know it may; but it need not. It may easily be made to strengthen the individual instead of teasing him, and in the main its effect has been beneficial rather than the reverse.

Mr. F. H. Giddings said that the increasing centralization of which Professor James had spoken had been accompanied by another phase of development that had not received the attention it merited. This was the growth of private and voluntary agencies designed to coöperate with public administrative agencies, and the increasing dependence of the public agencies upon such private auxiliaries. This process has gone farthest, perhaps, in Massachusetts. One of the best examples is afforded by the Massachusetts system of charity administration. The state has the usual statutory provisions for the assistance of the dependent poor, and the usual town and county

administrative machinery for distributing poor relief. It has also a centralized supervision in the State Board of Lunacy and Charity. But in this board the principle of individual coöperation is recognized, its members being usually persons who have voluntarily made some study of charity administration and who serve without pay. To some extent, also, the functions of the board are advisory only. Acting in harmony with this board and with local authorities, there are in most of the cities, and in many towns, voluntary organizations under various names, the whole forming a very complete system of coöperation of individual effort with public administration. A similar coöperation is being developed in educational administration, and is producing gratifying results.

III. Report on the Connecticut Valley Branch of the American Economic Association, by Dr. E. W. Bemis, Secretary.

THE CONNECTICUT VALLEY ECONOMIC ASSOCIATION.

This, the first branch of the American Economic Association, was organized at Springfield, Mass., January 4th, 1886, with the adoption of a constitution, given below, closely modeled after that of the national society. The objects were declared to be "Coöperation in the study of social questions, promotion of economic research and of perfect freedom in all economic discussion." The entrance fee and yearly dues were placed at three dollars, of which half was to be given to the treasurer of the national society.

On this simple basis, and under the able presidency of Prof. J. B. Clark, of Smith College, this associa-

tion has grown steadily in numbers and influence until it now counts upon its rolls sixty-two members, including eleven ladies, living in Springfield, Northampton, Amherst, South Hadley, Westfield, Wilbraham and neighboring towns. Of these sixty-two, twenty-one are engaged in business as employers or as employés, fourteen are teachers, nine lawyers, seven clergymen, five editors and three physicians. Many of these are persons recognized as leaders of thought in the community. It was early decided to keep the regular meetings, which are held on the last Monday of each month, except in summer, when no sessions are held, above the level of a debating society, by always securing an hour's address from some one who had made a more or less special study of the subject of the evening. The members of the association were then privileged to speak or ask questions for another hour, if there was sufficient interest. The subjects considered and in their order have been as follows:

"Profit-Sharing," by Mr. F. H. Giddings, of Springfield.

"The Railroad Problem," by Prof. Arthur T. Hadley, of Yale University.

"The State and Labor," by the Secretary.

"President Jackson's Place in American History," by Prof. A. D. Morse, of Amherst College.

"The Knights of Labor," by Prof. C. S. Walker, of the Amherst Agricultural College.

"An Early Communist Experiment at Northampton," by Mr. Arthur G. Hill, of Florence.

"The Modern Limits of Competition," by Professor Clark and Mr. Giddings.

"The Tariff," by Prof. F. W. Taussig, of Harvard University.

"Our Public Lands," by Prof. A. B. Hart, of Harvard University.

"The Source of Business Profits," by Gen. Francis A. Walker.

"The Economic Aspects of Charities," by Mr. Frank B. Sanborn, Secretary of the Massachusetts Board of Charities.

"Popular Economic Fallacies," by Dr. G. M. Steele, of Wilbraham, and in connection therewith,

"Economic Aspects of Biological Investigation," by Prof. J. H. Pillsbury, of Smith College.

"The Interstate Commerce Law," by Prof. E. R. A. Seligman, of Columbia University.

The local press has helped, by its excellent reports, to extend the influence of these meetings over the entire community. The attendance, including that of guests specially invited from time to time by any of the members so choosing, has averaged the past year about fifty, reaching eighty on two or three occasions.

For the benefit of those desirous of starting similar centers of economic thought elsewhere, it may be stated that owing to the great generosity of all our speakers, who have only been paid their expenses for their very valuable lectures, and owing to the generosity of the city of Springfield, which, through its school committee, has given a good room in the high school building, lighted and heated, and has only asked us to pay the janitor, our entire expenses for the year and five months since our organization have been only sixty-eight dollars and forty-seven cents, while \$156 have been paid into the treasury of the national association.

With ninety-five dollars and three cents to its credit, and with an interested membership of many of the most thoughtful of the community, the Connecticut Valley Economic Association looks forward with hope to still greater activity and influence in the future.

At the suggestion of Professor Ely, and others of the national association, I beg leave to offer a few suggestions relative to the formation of similar

branches elsewhere. It does seem as if a more important step toward the economic education of the country, and the increased usefulness and power of the American Economic Association, could not be taken. From such experience as comes from connection with this vigorous branch, the speaker is convinced that any one willing to devote some energy and time to the work can organize a strong association in any city or intelligent village community in this country. There is such an *esprit de corps* among the able professors of our national body, that the best addresses and informal talks can be secured at very little expense, at least in most of the New England and Middle States, while almost any Western city is abundantly able to find in its borders, or within a reasonable distance therefrom, many men competent to speak upon special lines of economic, political and social science. Such has been the experience of a local but valuable economic society of which the writer was once a member in Minneapolis. If really stimulating and important papers and discussions could be had, as was always the case, in these meetings so precluded by distance from outside help, how much more likely of success would be a branch of the American Economic Association like that at Springfield, in any large city or intellectual center this side of Chicago. Another advantage of connection with the American Economic Association, which ought to be mentioned, is the receipt of its valuable monographs, to which all are entitled.

The expense in most cases would be somewhat more than in Springfield, but the dues might easily be put at five dollars or even more, if found necessary. Our experience in the Connecticut Valley, however, leads

us to disbelief in suppers or other expensive entertainment. It may be surprising, but it is an encouraging sign of the times, that scores of our most influential citizens are glad to come together for solid meat, for able discussions of the vital questions of the day. The most hopeful feature of some of our labor organizations is their honest attempt to inform themselves upon these topics. Our so-called educated classes equally need this instruction, in fact, even more, the writer believes. Surely ignorance with them is more wide-reaching in its baneful influence.

It is certain that these questions *will* be studied by those who feel themselves aggrieved and oppressed. Is it not also essential that others should likewise form intelligent opinions, that out of it all may come a higher organization of industrial society? On a recent ride from Buffalo to Cleveland the writer found a delegate to the Cincinnati labor convention able to refute nearly every one in the car, though his views upon the greenback and other questions discussed were full of economic fallacies. May it not be *one* mission, and an *important* mission, of the American Economic Association to organize such branch associations of men and women, as, while increasing ten-fold in scores of places, as in Springfield, the membership of the national body shall also serve to educate and arouse public opinion upon the pressing needs of our economic and social order? A labor of love without immediate tangible reward it may seem to some, but none the less promising of great and enduring results upon the economic upbuilding of our country.

CONSTITUTION OF THE CONNECTICUT VALLEY ECONOMIC ASSOCIATION.

ARTICLE I.—*Name.*

This Society shall be known as the Connecticut Valley Economic Association.

ARTICLE II.—*Objects.*

1. Coöperation in the study of social questions.
2. Promotion of economic research.
3. Promotion of perfect freedom in all economic discussion.

ARTICLE III.—*Membership.*

Any person may become a member of this Association by paying three dollars, and after the first year may continue a member by paying an annual fee of three dollars.

ARTICLE IV.—*Officers.*

The officers of the Association shall consist of a President, two Vice-Presidents, Secretary, who shall also be Treasurer, and a Council of the above and three others.

ARTICLE V.—*Election and Duties of Officers.*

The President, Vice President, Secretary and Treasurer shall be elected by the Association at the regular annual meeting in January and shall perform the duties usually pertaining to such officers.

1. The Council shall consist of the above-named officers and three other members elected by the Association at the regular January meeting. It shall serve for one year and have power to fill vacancies, subject to the approval of the majority of the members present at the first meeting thereafter.

2. The Council shall have charge of the general interests of the Association and shall have power to call meetings and prepare a programme for them.

ARTICLE VI.—*Meetings.*

The Association shall meet the last Monday in every month, unless otherwise ordered by the Council, and shall be governed by the rules and regulations that usually obtain in like bodies and by such by-laws as may from time to time be adopted.

ARTICLE VI.—*Amendments.*

Amendments, after being approved by a majority of the Council, may be adopted by a majority vote of the members present at the next regular meeting of the Association after notice of the proposed Amendment has been given.

[A resolution was adopted instructing the Council to see what arrangements could be made for joining the American Economic

Association. The proposition of the latter to receive the Connecticut Valley Association as a branch was accepted, and it was provided that one-half of the amount of dues should be remitted for local expenses.]

Members made remarks on the advantages of local branches, and the wish was expressed that we might have a large number of branches. Members from Springfield testified to the benefits which their city had in many ways derived from the existence of a branch society in that city.

IV. Report of the Secretary on the "Condition and Prospects of the American Economic Association."

Professor Ely congratulated the Association on the growth of the Association and also on the high rank which its publications had taken; at the same time he urged the members present not to relax their efforts to increase the membership, and said that he hoped to see the time when instead of three hundred members, the number at that time, they would have three thousand members. One of their objects was to diffuse knowledge and to cultivate the habit of reasoning on economic and social topics. He called attention also to the desirability of the establishment of a Publication Fund, the purpose of which was perhaps sufficiently indicated by the name given to it. A Prize Fund was also desirable in order to encourage a spirit of economic research among the college men of the country and others, and to turn the thought of the educated to the pressing problems of the time.

WEDNESDAY, MAY 25.

Both Associations went to Plymouth, and dined together at the Samoset House, and this was the conclusion of the second annual meeting.

RECEIPTS.

For Fees for 150 members, 1885-6.....	\$468.00
" " 48 Conn. Valley Association, 1885-6.....	72.00
For Fees for 165 members, 1886-7.....	495.00
For Fees for 40 members Conn. Valley Association, (per Benis).....	60.00
For Fees for 19 life-members.....	175.00
" Publications sold to subscribers, etc....	297.82

EXPENDITURES.

To paid John Murphy & Co., and Gingenthaler, Weil & Co., for printing Association's Publications, Volume I, as per vouchers, No. 14, 17, 22, 28, 32,.....	\$980.71
To paid Phil Cowen, for printing constitutions, stationery, stamps, etc., as per vouchers: 5, 7, 10, 16, 31,.....	198.26
To paid Ayres, Jones & Smith, for Secretarial work for Dr. Ely, as per vouchers: 6, 13, 19, 15, 18, 23, 30, 31,.....	143.36
To paid Dr. Ely, for stationery, stamps, books, etc., as per vouchers: 3, 8, 20, 21, 29, 30,.....	69.32
To paid for addressing, envelopes, postage, etc., as per vouchers: 1, 2, 4, 9, 11, 12, 21, 25, 26, 27, 35,.....	37.40
	<hr/>
Cash balance on hand May 17, 1887,.....	438.57
Total receipts to May 17, 1887	<hr/>
	\$1867.82
	<hr/>
Respectfully submitted, New York, May 17, 1887,	
EWWIN R. A. SELIGMAN,	

Audited and found correct,
ALEXANDER JOHNSTON,
RICHMOND M. SMITH.

AMERICAN ECONOMIC ASSOCIATION.

ASSETS.

As per memoranda from Secretary's book:

Amount due from agents for publications.....	\$142 57
" " " individuals for publications...	10 75
" " " for advertisements.....	40 00
" " " from R. T. Ely, cash received for publications	15 82
Copies on hand, 350 of Vol. I, at \$4.00.....	1400 00
Over 1000 single numbers of Vol. I and II.	600 00

	\$2209 14
Cash in hands of Treasurer.....	438 57
Amount due for annual dues, 1886-7, 33 members..	99 00
Amount due for annual dues, 1886-7, Conn. Valley Association, 22 members.....	33 00

Total Assets,	\$2779 21

LIABILITIES.

0 00

May 17, 1887.

EDWIN R. A. SELIGMAN.

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- HAMILTON, ADELBERT, Esq., Room 18, 168-170 east Washington st., Chicago, Ill.
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- HART, DR. ALBERT BUSHNELL, Harvard University, Cambridge, Mass.
- HASSLER, CHARLES W., Esq., 174 Sixth ave., Brooklyn, N. Y.
- *HATHAWAY, HARRISON, M. D., corner of Miami and Fort sts., Toledo, Ohio.
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- HOFFMAN, Mrs., 436 Virginia st., Buffalo, N. Y.
- HOFFMAN, Miss M. W., 436 Virginia st., Buffalo, N. Y.
- HOLCOMB, W. P., Ph.D., Swarthmore College, Swarthmore, Pa.
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- JENKINS, Thornton A., Rear Admiral, U. S. Navy, Member of Washington Phil. Soc., etc., etc., 2115 Pennsylvania ave., Washington, D. C.
- JENKS, J. W., Ph. D., Knox College, 314 west South st., Galesburg, Ill.
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- KELLING, HENRY, Esq., Clerk's Department, P. O. Box F, Walla Walla, Wash. Ter.
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- MOWRY, WILLIAM A., Esq., 16 Hawley st., Boston, Mass.
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- *STERNE, SIMON, Esq., 29 William st., New York, N. Y.
- STEVENS, ALBERT C., Esq., Bradstreet's Editorial Rooms, 279 Broadway, New York, N. Y.

- STEVENS, Miss C. F., Mt. Holyoke Seminary, South Hadley, Mass.
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- STROSSER, A. Esq., Room 21, Fitch Institute, Buffalo, N. Y.
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- *SWAYNE, Gen. WAGER, 195 Broadway, New York, N. Y.
- SWAZY, Miss HELEN CLARK, 27 Maple st., Springfield, Mass.
- SWEETZER, Miss ABBIE L., Mt. Holyoke Seminary, South Hadley, Mass.
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- VENABLE, RICHARD M., Esq., 29 N. Calvert st., Baltimore, Md.
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- WALKER, Rev. C. S., D. D., Box 318, Amherst, Mass.
- *WALKER, Gen. FRANCIS A., President of Massachusetts Institute of Technology, Boston, Mass.
- WARD, Rev. JULIUS H., 23 Lincoln st., Boston, Mass.
- WARD, Prof. LESTER F., 1464 R. I. ave., Washington, D. C.
- WARD, ROBERT, Esq., Box 128, South Orange, N. J.
- WARDWELL, GEORGE T., Esq., 235 Hudson st., Buffalo, N. Y.
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- WHITE, Hon. ANDREW D., Ithaca,
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- WHITE, CHAS. J., Esq., 209 Main
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- *WHITE, JULIAN LEROY, Esq.,
905 North Charles st., Balti-
more, Md.
- WHITE, WM. HOWARD, Esq., 74
Wall st., New York, N. Y.
- WILCOX, Miss Mary A., Welles-
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eca st., Buffalo, N. Y.
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Statistics and Economics.

AN OUTLINE OF STATISTICAL SCIENCE WITH ESPECIAL REFERENCE
TO THE USE OF STATISTICS IN POLITICAL ECONOMY
AND SOCIAL SCIENCE.

— BY —

RICHMOND MAYO SMITH, A. M.

PROFESSOR OF POLITICAL ECONOMY AND SOCIAL SCIENCE
IN COLUMBIA COLLEGE.

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PREFACE.

The following monograph is neither a handbook of statistics, nor a textbook of statistical science. It does not pretend to give full data on any subject, or to discuss all the questions of statistical method and procedure. It is merely an attempt to put, briefly, into English that conception of statistics which regards them not merely as information, but principally as contributions to the building of a social science.

England and the United States occupy an honorable position in statistical investigation; the former through the long activity of its Registrar-General's office, its Board of Trade, and the labors of such men as Tooke, Newmarch, Neison, Farr, Giffen and many others; the latter through its decennial censuses, especially the tenth, the reports of the Massachusetts Bureau of Labor Statistics, and the efforts of Dr. Edward Jarvis, Francis A. Walker, Carroll D. Wright, etc.

Comparatively little effort, however, has been made in English to popularize statistics as a whole, to bring them into connection with social science, and to present a systematic view of the knowledge of human society which we are trying to gain by the statistical method. This has been done in Germany, France and Italy, by Mayr, Haushofer, Block, Morpurgo and others.

This monograph rests largely on the labors of these men. In particular, the little book by Professor

Georg Mayr, *Die Gesetzmässigkeit im Gesellschaftsleben*, has been closely followed. The whole conception of statistical science, the arrangement of parts, and many illustrations are directly from it; and it would be impossible for me to indicate fully how much I have been influenced by a book so small in compass and so rich in ideas.

Many authorities have been used, a few of which are indicated at the beginning of each section. No attempt has been made to furnish a complete bibliography; and it was not thought worth while to multiply foot notes by giving the origin of each statistical statement. They are taken almost entirely from official documents which are easily accessible. The statistics for the United States are principally from the tenth census; those for Massachusetts, from the state census of 1885; those for Prussia, from the *Zeitschrift des Preussischen statistischen Bureaus*; for Germany, from *Das statistische Jahrbuch für das Deutsche Reich*; and many international statistics, from the invaluable Italian publication, *Movimento dello stato civile*.

It was intended, at first, to give three additional sections:—on the History and Literature of Statistics, on Statistical Bureaux, and on Reform in Statistical Organization and Methods. But the literature on these subjects in French and German is abundant and accessible to the special student, and has just been admirably supplemented by Mr. C. F. Pidgin's *Practical Statistics*, and will be still further supplemented by the same author's *History of Statistics* which is promised next year.

R. M. S.

STATISTICS AND ECONOMICS.

I.

THE STATISTICAL METHOD CONTRASTED WITH THE HISTORICAL AND COMPARATIVE METHODS IN THE STUDY OF SOCIAL SCIENCE.

It is everywhere recognized that induction is playing an important part in the study of the social sciences. Theoretical treatment is out of favor and we hear on every side of inductive social science, of historical political economy, of comparative jurisprudence. Many authors devote their attention exclusively to the study of mere historical facts, with no attempt to formulate principles from them. Some even deny that the time has as yet arrived for the formulation of principles, and look forward to years of laborious investigation on the part of students before we shall have enough material and in such shape that it will be safe or profitable to draw conclusions. Almost every professed student of political economy or political science feels it necessary, in order to vindicate his scholarship, to devote a portion of his time to such investigations even if they cover only a small field. So we have specialists in each department of historical and economic knowledge. Even where one ventures on a systematic treatise he feels obliged to load his pages with illustrations from historical and contemporary sources.

In this condition of the social sciences one of the most fruitful topics for discussion is as to the various methods of which they are able to make use in order to get the material for their inductions. The validity of the results will depend upon the validity of the methods, and the strength of the argument, upon a due appreciation of what the method can or cannot accomplish. We are wasting our efforts in many directions because we are trying to force out of our methods things which they can never yield. We are so greedy of facts that we accept conclusions unwarranted by the facts. The science not only burdens itself with data which are not perfect enough to be of value, but is sometimes obliged to reverse its own conclusions because it has philosophized too hastily.

There are three methods of which the social sciences make use in order to get material for induction. These are the historical, the comparative, and the statistical. The historical is the one which has been longest in use and which is the favorite at the present time. It is not necessary to define here its exact value. History shows us the past experience of mankind. It reveals on a large scale the forces which are at work in the formation and modification of social institutions. It shows by what motives men are influenced and the strength of those motives. It discloses relations of cause and effect. It gives us indications of the direction of human development and whether we are tending. More than all, it enables us to correct our theories of society. It may be doubted if the study of history has done a more important service in modern times than this: that it has corrected notions

of political and economic theory by the test of past experience. It performs the same service for society that a long life does for the individual man. It prevents our falling into numerous errors and mistakes by the remembrance of past sufferings. History does not repeat itself; but its study is a balancing power which prevents the repetition of the unfortunate experience. It guides the statesman in the conduct of affairs, and the political scientist in the careful elaboration of his theories so that they shall fit the realities. It is the favorite basis of study for political science and jurisprudence, and is also of very great value in economics, although the enormous changes which have occurred in the economic organization,—even more momentous perhaps than those which have occurred in the political—make it of less value there.

The comparative method, also, is a great favorite in political science and jurisprudence. It consists in comparing institutions in different countries for the purpose of discovering how different peoples have solved the same problem. It is of very great value. It broadens our knowledge; it extends our experience; it reveals to us new expedients for meeting unexpected emergencies. In the formulation of principles, it enables us to generalize on the basis of a great mass of facts instead of the limited experience of one nation or one community. In the practical problems of political economy, also, the comparative method is of very great value. In banking, for instance, we compare the experience of the civilized world when we desire to change or to modify our own system. The factory laws have been carried from one country to another and adopted

almost *en bloc*. Often the experience of one country well advanced in civilization acts as a warning to other countries following after. The social discontent of Europe may spur us on to avoid those evils which give rise to socialism. The method restrains the effort to make the principles of political economy cosmopolitan, as the historical method has destroyed the idea of perpetualism. At the same time it reveals what is really common to all civilizations and peoples.

The statistical method differs from the historical and comparative, and gives us results which cannot be obtained by them. They give us qualitative statements of the phenomena of human society; statistics give us quantitative measurements. They give us general descriptions in words; statistics give us exact descriptions in figures. History records the gradual or rapid increase of any country in population; statistics number the inhabitants. History would observe in a general way that after a famine or during a war the growth of population was retarded; statistics would show the degree of retardation and the immediate influence of the famine or the war. Comparison of institutions might show us general results of certain legislation in the restraint of crime. It might be a matter of observation that the infliction of certain penalties had the tendency to decrease criminality, while the infliction of certain other penalties had no appreciable effect. Statistics would show the exact increase or decrease of crime under the different penalties. It was a matter of common observation that the Bavarian marriage laws increased the number of illegitimate births. Statistics showed the exact number, and the decrease

in the amount of illegitimacy as the laws were made more liberal. In all directions statistics come to the aid of the general observations of history and the comparison of institutions by reducing them to exact form. In other words we have exact measurements instead of inexact. In many cases statistics reveal connections of cause and effect which could only be guessed at by history, or comparison of institutions. Many of the common notions about the effect of illiteracy, poverty, and unsanitary conditions on the commission of crime are the direct fruit of statistical observation. So also the doctrine, in many quarters so popular, that crime is largely the result of bad social relations, and not within the real volition of the criminal, has been established, so far as it is established, by the spread of statistical information. This will become clearer if we define at once the kind of knowledge which statistics can give us. This knowledge is of three kinds, differing in importance and in character.

(1) Statistics give us knowledge which can be obtained by mere enumeration or by a succession of enumerations. Examples are: the number of inhabitants in any country at any period; the increase or decrease of the population during successive periods; the productive capacity of a country; the commercial transactions, exports and imports, amount of money, banking facilities, and the general statistics of production, distribution and exchange. All this is the simplest possible work, and requires only a staff of enumerators and legal power to compel an answer to inquiries or the making of certain returns. The results obtained may be used in a great variety of ways,—simply as information, as illustrations of

political or economic progress or the reverse, or as a basis for a line of reasoning as to the proper course of conduct in public affairs. The function of the statistician is entirely subordinate, and he is simply an administrative officer.

(2) Statistics, in the course of these enumerations, often betray certain fixed relations which have the character of natural laws. These relations could not have been discovered by mere casual observation. Such for instance is the number of boys born to the number of girls. We might think from common observation that the number of births would be equally divided between the sexes. Statistics have revealed the fact that there is a constant excess of boys. The expectation of life as calculated in mortality tables is another example of this sort. A small number of instances, such as would come under the observation of one man, would prove nothing in respect to the average duration of life. But a large number of observations gives us knowledge on which we can safely base enormous financial transactions such as life insurance, annuities, etc.

(3) Statistics are sometimes able to trace relations of cause and effect which can be ascertained in no other way. For instance, when we study the price of wheat and the number of marriages, and find that they vary inversely, we come to the conclusion that economic prosperity and well-being are direct determining factors in the number of marriages. So, when in Bavaria we find that the infant mortality is highest in those counties where the mothers are accustomed to work in the field or the factory and feed the children on artificially prepared food, we have the cause of the increased mortality. When

we analyze the illegitimate births according to the religious confession of the parents, we trace the effect of ethical or religious teaching on the social actions of men. When we compare the number of suicides in winter with those in summer, we study the influence of climatic conditions on the minds of men. In this way the statistical method is trying to aid social science to formulate laws of human life. It is evident that these results differ from those obtained by the historical or the comparative methods. Concerning the validity of these so-called laws of society based on statistics we shall have a word to say at the end of this paper, after we have gained some knowledge of the data upon which they rest.

There is one more remark to be made in this connection :—Even where statistics reveal to us no law of social science, they may yet be of value in directing state action. If the statistics of crime, for instance, do not lead to any complete theory of the phenomenon we call by that name, yet the statistics of the effect of certain penalties on the frequency of crime may lead the state to change those penalties. So the statistics of trade and commerce are of value in directing state action in economic affairs. In many cases the statistics are not yet complete nor certain enough to lead to any law, while they do enable us to determine the general direction which the action of the community should take.

The object of this monograph is to sketch the general outline of statistics for the purpose of showing how far we have been directed towards general social laws by means of statistical observation ; to comment on these observations so far as they have been of value in directing state action ; and to sub-

ject the ordinary statistics to a critical analysis, for many of them do not at all prove what they are supposed to prove. It is hoped that such a treatment of the subject from a scientific standpoint will be of value when statistics are being so generally made use of in all branches of social science. At the end of this practical part I shall touch upon various matters of theoretical interest.

II.

AN OUTLINE OF STATISTICS.

It seems best to follow the common arrangement and divide the subject into three parts: (1) Population Statistics; (2) Economic Statistics; (3) Statistics of Vice and Crime.

PART 1.—THE STATISTICS OF POPULATION.¹

- ¹ Literature: Haushofer, *Handbuch der Statistik*. 2nd Ed., 1882.
Mayr, *Die Gesetzmässigkeit im Gesellschaftsleben*.
Kolb, *Handbuch der Statistik*.
Brachelli, *Die Staaten Europa's*.
Levasseur, *Statistique de la superficie et de la population des contrées de la terre*. *Bulletin de l'institut international de statistique*, 1886 and 1887.
Keltie, *Statesman's Year Book*, 1888.
Tenth Census of the United States, Vol. 1.
Census of Massachusetts, 1885, Vol. 1.
Statistisches Handbuch für den Preussischen Staat.
Annuaire statistique de la France.
Journal of the Statistical Society of London.
Zeitschrift des Preussischen statistischen Bureaus.
Statistisches Jahrbuch für das Deutsche Reich.
Farr, *Vital Statistics*.
C. F. Pidgin, *Practical Statistics*.

It is advisable to begin with the statistics of population for several reasons: In the first place, on account of their great practical importance in statesmanship and in political and social science. The population is the basis of the state on which its power rests. Wealth is created by the people, and the economic institutions of a country are largely modified by the number and character of the population.

In the second place, population is an especially favorable field for statistics because one can use the statistical method, that is, the observation of numerous instances, to the very best advantage. Thus in enumerating the population, in describing it according to its characteristics, sex, age, conjugal condition, births and deaths, marriages, emigration and immigration, etc., the statistical method alone is applicable. The historical and comparative methods are of little advantage.

Again, more attention has been paid to these statistics than to any other. We have a great number of observations, extending over more than a hundred years, so that our material is more complete in this part than in either of the other two. In Europe especially, the attention of statistical bureaux and of theoretical writers has been largely confined to what are called vital statistics. In the United States our observations have not been so complete owing to the lack of any continuous registration of births, deaths and marriages, but the census of 1880 made some new and very interesting efforts in this direction.

Finally, the study of the statistics of population forms a sort of transition from natural to social

science.¹ As an individual, man is subject to natural law. Births and deaths are, in the single case, pure process of nature. Man in the aggregate, however, is a social phenomenon, and births and deaths are social phenomena—dependent on the laws, manners and customs of the community. We stand here as it were, with one foot on natural and the other on social science. Here, also, we can gradually approach the question of free-will which is so troublesome in some portions of statistics. In regard to the sex of infants we can as yet trace no exercise of the freedom of the will. In the regularity in the number of still-born year after year, there seems to be an indication of absence of any freedom of the will. How is it with the number of illegitimates, which also remains constant from year to year? Marriages show the same regularity as deaths. Are they equally the product of outside influences? But these examples are easy compared with those we shall encounter when we come to the statistics of vice and crime, and it will be advantageous to meet the question before we get into the region where ethical interests seem too deeply involved to allow us to give an unprejudiced answer.

The Number of the Population.

The first thing in statistics of population is to ascertain the number of inhabitants in each country. This can be done by estimating the number or by actual enumeration. In former times the method was almost always that of estimate. Even now when we make statements as to population pre-

¹Mayr, Die Gesetzmässigkeit im Gesellschaftsleben, S. 97.

vious to the present century they are always of this sort. As bases for such estimates Haushofer mentions the following facts which are supposed to stand in some sort of constant relation to the total population:—the number of families, the number of houses, of hearths, of men of military age; the number of births, of marriages, or of deaths; the yield of certain taxes, or the consumption of certain necessities of life. Sometimes the inhabitants of a portion of the territory are enumerated and the rest are calculated proportionately.¹ An interesting example of such methods is the recent essay by Professor F. B. Dexter, "Estimates of Population in the American Colonies." The basis for the earlier numbers is either the tax list, the list of polls, or the enumeration of the militia. Censuses were generally unpopular in the colonies because they were commonly for the purpose of fiscal impositions, often on the part of the mother country.

Such estimates are always very uncertain, because the supposed relation between the known fact and the whole number of people may or may not be true. For instance, it is not at all probable that the proportion of houses to the entire population, or the birth, or death, or marriage rate was the same during the middle ages that it is at the present time.² It is still less probable that the per capita consumption of any article of food was the same then that it is now. All estimates of historians as to the population of cities or countries are to be taken with great allow-

¹The Tenth Census proceeded in this way in its statistics of foreign parentage. Tenth Census, vol. II.

²Jastrow, Die Volkszahl deutscher Städte zu Ende des Mittelalters und zu Beginn der Neuzeit, Berlin, 1886.

ance. The figures given by contemporary writers are not to be relied upon. Levasseur prints a curious table showing the estimates which have been made at different times of the population of the earth. The population of the entire earth was estimated by:¹

Riccioli.....	in 1660	at 1,000 millions.
Vossius.....	" 1690 "	500 "
Voltaire (dict. phil.).....	" "	900 "
Süssmilch.....	" 1765 "	1,980 "
Wallace.....	" 1769 "	1,000 "
Moheau.....	" 1778 "	950 "
Volney.....	" 1804 "	437 "
Malte-Brun.....	1804-1810 "	640 "
Almanach de Gotha.....	in 1810 "	682 "
Hassel, (Statistischer Umriss).....	" 1825 "	938 "
Stein.....	" 1825 "	884 "
Balbi.....	" 1828 "	847 "
Almanach de Gotha.....	" 1829 "	847 "
Berghaus.....	" 1843 "	1,272 "
Dictionnaire de Meissas et Michelot...	" 1845 "	1,009 "
Dieterici.....	" 1859 "	1,288 "
Belm.....	" 1866 "	1,850 "
Belm und Wagner.....	" 1874 "	1,391 "
Levasseur (Annuaire du bureau de longitude).....	" 1878 "	1,439 "
Belm und Wagner.....	" 1883 "	1,433 "
Levasseur.....	" 1886 "	1,483 "

The figures for many parts of the world are at the present time mere estimates. For Africa we are dependent on the opinion of travellers, who see only a portion of the country generally along the banks of a navigable river where the population would naturally be the densest. The figures for China and India vary many millions from one estimate to another. Even where they have a census, as in the Turkish Empire and some parts of South America,

¹Bulletin de l'Institut international de Statistique, T. II., 2^eme liv., p. 238.

the results are not altogether accepted by statisticians, for the statistics may be imperfectly taken, or manipulated for fiscal or electoral purposes.

In Europe and North America, since the beginning of this century, we have a series of enumerations conducted with more and more care, so that for these countries the results are on the whole satisfactory. The United States began with its decennial census in 1790, England followed in 1801, and the other countries of Europe have followed with regular enumerations at stated periods, every ten or five or three years. In countries where they have an enumeration of births and deaths, and statistics of emigration and immigration, they are able to estimate pretty closely the population for the years between the census years.¹

After we have established a census or enumeration of the people, it is necessary to determine when and where and whom to enumerate. Shall we number all the persons present in the territory of the state at a certain time, whether citizens or strangers? Shall we take them where they happen to be found, or where they are legally resident? Shall we attempt to ascertain the number of citizens who are abroad at the time of the enumeration? All of these questions are sufficiently puzzling to a census office, and

¹Most countries have a census once in ten years: thus Belgium, Switzerland, Austria-Hungary, Sweden, Denmark and the United States, in 1880, and so on; Great Britain, Italy, Bulgaria, Canada, Venezuela, India, Australia and Algeria, 1881 and so on; Germany every five years, 1880, 1885, &c.; France, 1881, 1886. Down to 1867 the principal countries of Germany took a census every three years. The tendency now is to fix on the decennial periods 1880, 1890, &c. See complete table of censuses since 1890 by Levasseur, *Bulletin etc.*, 1886, p. 24.

they often affect the comparability of censuses of different countries. As regards the time allowed for the enumeration, it is generally agreed that it should be as short as possible. In our census of 1870 the enumerator was allowed from the first of June to the tenth of September to complete his lists. During such a period people are liable to change their residence and either be counted twice or escape enumeration altogether. In the census of 1880 the time was reduced to one month in the rural districts and to two weeks in the cities.

In respect to the persons that shall be enumerated, it is the custom to take, first, the total number of persons actually in the country at the time of the census and then make various sub-divisions. The different possible combinations are well illustrated by the following table of the population of Prussia according to the census of 1880:

Inhabitants of Prussia: according to domicile, (dem Aufenthalt nach.)

(a) Persons actually present (Ortsanwesende).....	27,279,111
(b) Resident in the place (am Zählort wohnhaft).....	26,936,799
(c) Resident elsewhere (anderswo wohnhaft).....	342,402
(d) Absentees (Orts-abwesende).....	287,208
(e) Resident population (Wohn-Bevölkerung).....	27,273,917

Inhabitants according to citizenship (Staatsangehörigkeit nach).

Prussians.....	27,016,763
Other Germans.....	163,390
Foreigners (Reichsausländer).....	98,958

By combination of the different numbers we can ascertain any desired fact about the distribution of the population of Prussia by place or nationality.

Race and Nationality.

The population may be analyzed in various directions: for instance, according to race, nationality, or place of birth. The ethnological distinction is one difficult to follow statistically where different races are inhabitants of the same country and have intermingled in blood or adopted the same language. The division of the inhabitants of Europe into Germanic, Latin, and Slavonic, besides various minor races such as Magyars, Finns, Tartars, Turks etc., rests on the most general estimate and on no exact enumeration. It is also of only the most general ethnological interest. The composition of the population of any single country, on the other hand, often has great political importance, for there must be a certain homogeneity of the population in order to have a harmonious and stable political life. These distinctions are commonly based on language. Countries of Europe show wide differences in this respect. In France 93 per cent of the inhabitants are of French nationality. In Germany 92 per cent are of German blood. In Switzerland we have a great mixture: 69 per cent are Germans, 24 per cent French, and 5 per cent Italian. Austria presents a mixture of populations that makes any homogeneous development and any strong national feeling extremely difficult. The different elements are represented in the following proportions: Germans, 30 per cent; Czechs, 16 per cent; Magyars, 14 per cent; Ruthenians, 9 per cent; Kroats and Servians, 9 per cent; Romanians, 8 per cent; Poles, 7 per cent; there are besides, Slovenians, Armenians, Albanians, Italians, Israelites, Zigeuners, Bulgarians, Greeks,

etc. The great difficulty is that no one nationality is sufficiently strong to attain a dominant position over the others.¹

In the United States the distinction of race can be followed out satisfactorily only in one direction—that of color. We can distinguish the black from the white, including among the blacks all who have any negro blood such as the mulattoes, quadroons, etc., although in the Massachusetts census they distinguish between the blacks and the mulattoes. We can also distinguish the Chinese, Japanese and Indians, in the same way. In 1880 there were 6,580,793 colored: 105,465 Chinese; 148 Japanese; and 66,407 Indians. Inhabitants of Indian territory and of Alaska, and Indians not taxed are omitted. The negroes alone are of importance to us in this connection. It is not necessary to insist upon the gravity of the ethnological, political and social problem presented by the presence of this great body of persons of an inferior race, which we can never hope will amalgamate in blood with the white population. The study of its condition, its rate of increase, its distribution, its economic progress, its moral characteristics should be one of the constant problems in a properly managed statistical bureau of the United States.

The Foreign-Born in the United States.

Among the whites in the United States the distinction of race can no longer be followed out. Peoples of different nationality and blood have adopted the same language and habits of life and become

¹All the above data from Brachelli, *Die Staaten Europa's* 3rd. edition.

largely intermingled. The only way we can distinguish them now is by place of birth. The statistics of 1880 are well known. Only the principal nations need be given :

Total foreign-born.....	6,679,943
Born in German Empire.....	1,966,742
" " Great Britain.....	2,772,169
" " England.....	662,676
" " Ireland.....	1,854,571
" " Scotland.....	170,136
" " Wales and not specified....	84,786
" " British America.....	717,084
" " Sweden.....	194,337
" " Norway.....	181,729
" " France.....	106,971
" " China.....	104,541

No other country has more than 100,000.

It is not proposed to delineate here the influence of this enormous number of foreigners in the increase of population, their distribution throughout the country, their concentration in large cities, their representation in different industries, their contributions to the defective and delinquent classes. All this has been done in the tenth census of the United States, and on a small scale but very carefully in the Massachusetts census of 1885. The statistics are of great interest in political and economic science, and we have here a domain which the European statisticians are not able to touch because they have not the phenomena. There are one or two points of ethnological interest which may be mentioned here. They are as follows :

(a) It is impossible to distinguish between the different ethnical elements in the United States. We can, however, speak of the native American stock and the foreign stock. For this purpose it is necessary

to distinguish between the descendants of the original colonists and the more recent immigrants. In one sense we are all the descendants of immigrants. But there is a wide difference between those who came here when the country was a wilderness and who underwent all the dangers and hardships of the settlement, and those who came after the wilderness had been subdued and the state and social institutions established. The line between the two may be conveniently drawn about 1790 when the state was finally established in its permanent form. The early settlers were left alone for so long a period that they acquired characteristics which distinguish them sharply from those who came in later years. They may be called the American stock. How many of the present inhabitants of the United States are descendants of this American stock? In the absence of a general registration of births and deaths it is impossible to answer this question statistically. The only data we have are the decennial enumerations of the people and the statistics of immigration since 1820. Calculating a rate of increase by taking the actual increase each decade less the increase due to immigration, and applying it to the white population of 1790, we would have in 1880, a total of 25,000,000 whites as representing the original American stock,—about one-half of the population.¹

(b) The foreign element in the United States tends constantly to increase. It is sometimes said, that while in 1870 the proportion of the foreign-born was 16.8 per cent of the native, in 1880 it was only 15.36

¹See an article by Dr. Edward Jarvis in the *Atlantic Monthly* for April, 1872.

per cent, and that therefore the foreign element is not increasing as fast as the native. It must be remembered, however, that the children of the foreigners, if born here, are classed as natives. The consequence is that immigration has to offset not only the mortality of the foreign-born and the productivity of the native-born, but also the natural increase of the foreign-born themselves. It requires an enormous immigration to do this, and it is not surprising that the proportion of foreign-born shows some slight falling off. But the number of persons of foreign descent is constantly augmenting owing to immigration and to their own natural increase. It is still an unsettled question whether women of foreign descent are more fruitful than the American women. The recent returns of the Massachusetts census seem to show that the foreign-born women have a larger number of children, but that there is a greater infant mortality among them. But if they only hold their own, that, with the continuous immigration, will constantly increase the relative strength of the foreign element. Of course all this is only from the standpoint of statistics. It is not necessary to say that these immigrants or their descendants become many of them the very best kind of Americans.

(c) It may be said, that these foreigners intermarry with the natives or with other nationalities and that thus we are forming a new nationality which will be distinctively American, and which will possess that strength which is often the characteristic of mixed races. We have some data on this point from the tables of parent nativity given in the federal census of 1880 and the Massachusetts

census of 1885. It appears that there are a number of persons who are the children of such mixed marriages, but that, for the first generation at least, the persons of the same nationality generally intermarry. It must be remembered in using these statistics that many of the marriages have already been contracted before the emigrants left home, when there was practically no choice in the matter. Possibly in future generations there may be a greater tendency to marry with natives, but at the present time many of the nationalities are so numerous represented that the tendency is to perpetuate the same blood. Ethnologically this is to be regretted.

Density of Population.

It is customary to divide the population of any country by the number of square miles it contains, and thus arrive at the average density of the population. This bare figure is greatly overvalued, for the density commonly depends upon whether the land is inhabitable or not, and that is merely a matter of physical geography. For instance, if we take the whole area of the United States the density is 17 persons to the square mile; while if we take only the actually settled area, it is 32 to the square mile; and if we take only the Eastern group of states, it is 60 to the square mile. Thus Levasseur gives the density of population of the world as 28.3 to the square mile; in Europe as 88.4 to the square mile; in Asia, 49.4; in Africa, 15.6; in North America, 8.8; in South America, 4.4; and in Australasia, 9.1 to the square mile. But in one portion of Europe, (Belgium), the density runs up to 520 to the square mile, and in

some parts of Asia, China for instance, the density is very great. So also the attempt to find the center of population is perfect nonsense. After you have found the exact locality, the distribution of population which causes its location is determined by so many influences that the information is practically of no value.

The distribution of population by density is controlled principally by economic considerations. Thus in Europe, the most densely populated portions are the valley of the Po in upper Italy, the valley of the Rhine including Belgium and Holland, Saxony, and the English counties between the mouth of the Thames and Liverpool. The causes of the dense population in these parts are the fertility of the soil, the facilities for commerce and the presence of manufacturing industries. In early times, commercial facilities had great influence in determining the distribution of population. If one examines the movement of population in the United States during successive decades, as depicted in the series of maps of the tenth census, it will be found that the Western movement was up the valleys of the Mohawk and the Susquehanna, and, after crossing the Alleghanies, down the Ohio to its mouth, and then up the Mississippi and the Missouri, the Arkansas and the Red rivers. That movement was before the building of railroads, when the rivers were the natural highways.

There is no natural law controlling the distribution of population, other than that of economic advantage; and all the different methods of studying its distribution by latitude and longitude, by drainage basins, by topographical features, by altitude, by temperature

and by rainfall, so elaborately carried out in the tenth census only emphasize this fact. Thus if we distribute the population of the United States according to latitude, we find 58 per cent of the inhabitants living between the 38th. and the 43rd. degrees. But between these parallels is where the continent is widest. It includes almost all the great cities, and covers the most fruitful strip of agricultural land in the whole country, together with the industrial regions of the Eastern states. As a matter of course the population will be densest in this region, not because of its latitude but because the inducements to population happen to fall together. If, as in England for instance, agriculture were in the South and manufacturing at the North, we would find no such concentration of population in latitude. In fact, when we come to study the population of the United States according to longitude, we find no concentration of that sort, because the manufacturing is largely East while the agriculture is West, and particularly because the trend of the Atlantic coast from the northeast to the southwest throws all the coast cities into different longitudes. So altitude, rainfall, and temperature do not of themselves cause the density. It is the combination of all these things, together with the accessibility of the country and its general attractiveness, that determine the distribution of population.

Urban and Rural Population.

The density of population offers some points of interest to political and social science. Very thin population commonly means a backward state of civilization, (hunting, fishing and cattle-raising), or

else a poor soil, an inaccessible region, or a harsh climate.¹ From whatever cause, it carries with it political weakness. A denser population, distributed over the land, means agriculture, together with some trade and manufacturing. Very dense population means manufacturing, or commerce on a large scale. This implies great wealth, high civilization, political power, commercial interests. It also means a working class, radical political aspirations, crime, vice and misery. Where we have a dense population it is generally accompanied with large cities, and this is a fact of the greatest importance in political and economic science.

It is difficult to classify the population into urban and rural on account of the varying definitions of the term city. In Europe the statistical congress recommended the number 2000 as the minimum limit for a city or urban population; but this classification has not been universally adopted. On this basis the percentage of urban to the whole population was:²

In Holland (1868).....	80.2	In German Empire (1880).....	41.4
" Belgium (1867).....	64.0	" Prussia.....	42.0
" Great Britain and Ire- land (1871).....	53.1	" Bavaria.....	27.7
" England and Wales.	61.2	" Saxony.....	56.6
" Scotland.....	57.1	" Hamburg.....	94.0
" Ireland.....	19.0	" Switzerland.....	44.0

Later statistics for England and Wales show that, in 1881, 66.6 per cent of the population were living in places of 3000 inhabitants and over. London alone

¹See Tenth Census of the United States, vol. I., Introduction.

²From Brachelli, p. 76. The figures for Germany from *Statistisches Jahrbuch für das Deutsche Reich*, 1882.

comprised 14.69 per cent of the total population of England and Wales. This concentration of population in large cities is constantly increasing. In 1801 the city of London comprised only 10.78 per cent of the total population of England and Wales. During the ten years from 1871 to 1881 the population of city districts in England and Wales increased 19.63 per cent; while the population of country districts increased only 7.36 per cent. In no country is this increase of city population better illustrated than in the United States. In 1790 only 3.3 per cent of the population were living in cities of 8000 inhabitants and over, while in 1880, 22.5 per cent were living in such cities.

This increase of urban population in modern times is due to industry and commerce. This is especially noticeable in such a country as England, which has had an immense development of that sort during this century. It is also seen in the United States. The development of railroads and other means of transportation has had the effect of increasing the city population, because they tend to a concentration of business. A very curious result is yielded by comparing the urban population of an old country like Germany, where the cities were started before the introduction of railroads, and that of the United States, where many of them have reached their growth since then. It is not possible to make an exact comparison because the classification is different. We can, however, reach some facts of interest. On the whole, the urban population of Germany is greater than that of the United States. In Germany, 28 per cent of the population live in towns of 5000 and over, and in the United States 26 per cent

live in towns of 4000 and over. On the other hand we find that in Germany the small towns preponderate, and in the United States the large cities. In Germany, 116 towns of 20,000 inhabitants and over have 7,300,229 people, or 16 per cent of the total population, while in the United States, 100 towns of 20,000 inhabitants and over have 9,084,262 people, or 18 per cent of the total population. That is, in Germany the large towns average only 63,000 inhabitants each; in the United States they average 90,000 each. The large number of cities of moderate size in Germany is due to their slow growth and the political disintegration which gave rise to numerous political centers. In the United States, the railroads have benefitted the large cities at the expense of the small.

Population according to Sex, Age, and Conjugal Condition.

There are various characteristics of a population that are of interest in economic and social respects. These are its composition according to sex, according to age periods, and whether the persons composing it are married or unmarried. The distinction most easily arrived at is that of sex. We might expect that the number of males and females would be about equal. Statistics show us that in most of the countries of Europe there is a constant excess of females. But the countries vary greatly in the proportion of this excess. For every 1000 males there are in Europe 1021 females; in England and Wales 1054, in Scotland 1096, in Ireland 1044, in Sweden 1067, in Norway 1036, in Germany 1039, in Bavaria 1049,

in Baden 1052, in Würtemberg 1071, in Prussia 1033, in Switzerland 1046, in France 1008, in Belgium 995, in Italy 989, in Greece 933 females. In the United States, on the other hand, there are only 965 females to 1000 males. In the Eastern states there is an excess of females (Massachusetts 1077 females to 1000 males), while in the West there is an enormous excess of males, (Colorado only 504 females to 1000 males).

The excess of females over males in Europe is due to two causes. One is that there is a greater mortality among men than among women because of military service, dangerous occupations and addiction to vice and crime. The second is emigration, which carries off more men than it does women. The disproportionate number of females increases with advancing years, as is shown by the following table for Germany giving the number of females to 1000 males at each age :

Age.	Number.	Age.	Number.
0 to 5 years.....	995	30 to 40 years.....	1,051
5 to 10 "	1,002	40 to 50 "	1,060
10 to 15 "	996	50 to 60 "	1,109
15 to 20 "	1,012	60 to 70 "	1,130
20 to 25 "	1,037	70 to 80 "	1,160
25 to 30 "	1,047	Over 80 "	1,238

Mayr declares that nature tries to remedy this inequality, as for instance :

In France in 1821 there were 48.57 men and 51.43 women per 100 of population.

In France in 1872 there were 49.81 men and 50.19 women per 100 of population.

That is, the destruction of men caused by the Napoleonic wars had almost been made good. The differences in different parts of Germany, Mayr thinks, is

due to the great infant mortality in South Germany, which presses more severely on the boys than it does on the girls, and brings about a greater excess of women in Bavaria, Baden, and Württemberg than in Prussia. No influence of climate has ever been successfully proven, although the reversal of the usual rule in the southern parts of Europe, Italy, Servia and Greece, would seem to point in that direction.

The general excess of males in the United States is due to immigration. It is strongest in the newly settled states and territories. In the East and South we have the excess of females observable in the countries of Europe and doubtless due to the same causes, increased mortality among men, and in some states, Massachusetts for instance, the immigration of females to work in the factories and as domestic servants, and the emigration of males.

Population according to Age Periods.

This is of great interest in political and economic respects. If population were stationary, that is the births just made up for the deaths, and if the deaths occurred in regular proportions from year to year, the age structure of a population might be represented by an equilateral triangle. But none of these things occur. In any growing population the number of births from year to year is increasing, so that the base of the triangle is broadened out. So also the mortality is greater in the years of childhood than in later years, which causes a rapid sinking in of the sides of the triangle towards the base. Special causes also come in :—A war or an epidemic may have weakened one generation, and it carries the evidence of that weakness to the end : emigra-

tion carries away people of middle life, and causes the sides of the triangle to fall in: immigration, on the other hand, adds to the people of middle age, and causes the sides of the triangle to bulge out. Cities are like countries having a large immigration, because the rural youth are accustomed to flock to them. The following table, although not all the figures are of recent date, will illustrate national characteristics in this respect. Out of 1000 of the population there were :

Age	In Germany, 1850.	In Eng- land, 1871.	In France, 1872.	In Sweden, 1850.	In U. S. 1880.	In U. S. 1870.	In U. S. Native 1870.	In U. S. For'gn 1870.
0- 5..	139	135	93	118	138	143	164	15
5-10..	114	119	91	116	128	124	140	31
10-15..	103	107	87	106	114	124	138	37
15-20..	93	96	84	91	100	104	110	60
20-25..	86	88	88	79	102	96	94	110
25-30..	73	78	72	73	86	79	71	129
30-40..	130	128	139	131	127	126	105	247
40-50..	104	100	125	119	90	90	77	190
50-60..	80	73	104	85	60	58	50	102
60-70..	53	47	72	51	36	32	29	49
70-80..	21	22	36	26	15	13	12	17
80-90..	4	5	7	5	3	7		
Over 90	0.2	0.4	0.4	0.3	0.5			

In Germany, and the United States the lowest age class is very well filled, owing to the large birth rate. The enormous number of children under the head of U. S. native is due to the fact that the children of immigrants, born on this soil, go to swell the number of natives and so to increase the proportion of children. This also explains the small number of children under the head of U. S. foreign, for it would include only immigrants of that age, who are comparatively few in number in any year. In France, they have a small number of children and hence the middle age classes are much better filled out. Something of the same sort is seen in Sweden, where they marry late and have a small number of children. In

most countries, more than one-half of the population are under 25 years of age. The only exception in this table is France.

Population may be still further classed in regard to age so as to bring out the number of productive and of unproductive age, of military, voting, school, child-bearing age, etc. The most interesting of these are the productive and unproductive, and the voting age.

Productive and Unproductive Age.

To the economist, a population has two unproductive periods, that of childhood and that of old age. Between these lies the productive period. The relative length of these three periods is of great interest, for during the productive period the population must pay the expenses of both unproductive ones. The greater the number of persons in the productive period, the easier the burden of supporting the unproductive. It is impossible to say just when the child becomes productive and the old man becomes unproductive. That varies with individuals. The common classification is: under 15 years, from 15 to 70 years, and over 70 years of age. The following table shows the distribution of population according to those ages:

COUNTRY.	Under 15	Between 15	Over 70
	years of age.	and 70 years.	years.
Germany.....	35.6%	61.9%	2.5%
England.....	36.1	61.2	2.7
France.....	27.	68.7	4.3
Sweden.....	34.	62.9	3.1
Italy.....	32.4	64.6	3.0
United States.....	38.	60.1	1.9
United States Native White....	42.6	55.6	1.8
United States Foreign "....	6.4	90.3	3.3

The persons in the unproductive ages are nearly always one-third of the population. The only exception is France, where the peculiar distribution of the population again manifests itself. It must be remembered, however, that this table includes both men and women, so that it cannot be applied to the question of wages. When we come to consider the real bread-winners, the estimate of the Prussian bureau of statistics is more accurate. That estimate is, that for every 1000 men between the ages of 15 and 70 there are 2282 women, children and old men, so that where we exclude women and children from the factory a man's wages must be sufficient to support himself and 2.2 persons besides. The question is of great interest when we are considering the practicability of enforcing factory laws excluding women and children, and reducing the number of hours of the men.

The Voting Age.

The proportion of males of voting age to the whole population is sometimes of interest. In Germany, where the age requirement is 25 years, the proportion of voters is 23.2 per cent of the whole population. In the United States the absolute numbers and proportions of males 21 years and over in different classes of the population are as follows:

Of total number of males.....	12,830,349 or 25.5 per cent.
" native white males.....	8,270,518 " 22.4 " "
" foreign white males.....	3,072,487 " 46. " "
" colored males	1,487,251 " 22.6 " "

These figures do not represent the real voting population. Many of the persons do not possess the right to vote: others never exercise it. Of those

who are of legal age but are disqualified from voting we have interesting statistics for Massachusetts (1885). In that state, polls are males of 20 years of age and over. We have then the following distinctions:

Total number of polls, 567,959 or 29.24% of the population.

Legal voters, 442,616 or 77.93% of the number of polls.

Native polls not legal voters, 26,216 or 4.62% of the number of polls.

Aliens (foreign males over 20 years, not naturalized) 99,131 or 17.45% of the number of polls.

The Irish constitute 35.91 per cent of these aliens, the English 10.59 per cent, the French Canadians 17.44 per cent, and the Nova Scotians 8.78 per cent. But the foreign-born show very different inclination to get naturalized, as shown by the following table:

Of the foreign-born 20 years of age and over, (1885),

French Canadians.....	17,292	out of	22,427	or	77.10%	are aliens.
Germans.....	4,473	"	10,908	"	41.01	"
Italians.....	1,874	"	2,190	"	85.57	"
Portuguese.....	2,175	"	2,898	"	75.05	"
Swedes.....	2,889	"	4,013	"	71.99	"
English.....	10,502	"	23,339	"	45.00	"
Scotch.....	3,262	"	6,556	"	49.76	"
Irish.....	35,600	"	98,199	"	36.25	"
Total foreign-born	99,131	"	206,227	"	48.07	"

Many of these aliens have not been in this country long enough to be naturalized: others have no desire to vote. It would be interesting in a census of the United States to follow out the foreign-born,—how many of them have been in this country long enough to be naturalized, and of that number how many have neglected to do so. This would give us interesting information as to the political influence of the different nationalities of immigrants. We could also tell, by the number of votes cast at an election, how

far the right of suffrage is actually exercised, which we are unable to do with the present statistics.

Conjugal Condition.

The conjugal condition of the community is, to a certain extent, indicative of its prosperity. Where an abnormal number of persons are unmarried it may have an effect on the growth of population, or give rise to social evils such as illegitimate births and prostitution. Most of these things come out more clearly when we study the marriage-rate and the ages of persons getting married. If we take the whole population, about sixty per cent are unmarried. It is evident, however, that in the whole population are included a great number of persons who are too young to be married, and the proportions would vary as the number of children in a population is large or small. It is customary, therefore, to take the population above a certain age. Mayr gives the following percentages of the population of the age of 16 and over that are unmarried:

In France.....	33.1	In Portugal.....	43.0
In England and Wales	37.2	In Switzerland.....	44.0
In Italy.....	37.2	In Belgium.....	44.9
In Germany.....	42.0	In Ireland.....	45.0
In Norway and Sweden	40.0		

The small number in France is due to the peculiar distribution of population in that country; the large proportion in Ireland, to the emigration of married and marriageable persons.

The striking difference caused by emigration and immigration is brought out in the Massachusetts census of 1885, where they distinguished the native and foreign-born:

*Conjugal Condition of Persons 20 Years of Age
and Over.*

CONJUGAL CONDITION.	PERCENTAGES.					
	Males.		Females.		Aggregate.	
	Native.	Foreign.	Native.	Foreign.	Native.	Foreign.
Single	32.20	25.90	29.09	25.67	30.57	25.78
Married....	62.19	67.92	56.16	57.97	59.02	62.58
Widowed....	5.34	6.10	14.34	16.24	10.07	11.54
Divorced....	0.25	0.06	0.41	0.11	0.33	0.09
Unknown....	0.02	0.02	0.01	0.01	0.01

None of the above figures gives us exact information as to the number of persons unable or unwilling to get married, because at the age of 16 or 20 marriage is just commencing, and many who are then unmarried marry in later life. Mayr, therefore, gives the number of those who have reached the age of 50 and are still unmarried. If a man is not married at that age it is because he is unable or unwilling. The percentage of persons among the population over 50 years of age who are not and have not been married is:

In Saxony.....	6.4	In Germany.....	10.6
“ England and Wales,	9.9	“ Italy.....	11.5
“ Prussia.....	8.4	“ Ireland.....	14.4
“ France.....	10.3	“ Bavaria.....	19.2

When the number is greater than 10 per cent it is due to some social peculiarity. The very large number in Bavaria is due to the old marriage laws. In some districts it runs as high as 23, and 26, and even 40 per cent of the population of that age. In the Palatinate, on the other hand, where there is a similar

population but where the marriage laws did not exist, the proportion is only 6 and 8 per cent.

Mayr also gives some interesting figures showing the number of persons really living in the marriage relation. For this purpose he takes the persons between the ages of 40 and 50. That is the time when most of the marriages have already taken place and when too many have not been broken by death. The following table shows the percentage of the population of that age actually living in the married state.

In Saxony.....	84.	In France.....	77.6
.. Prussia.....	81.9	" Italy.....	76.9
" Germany.....	80.3	" Bavaria.....	74.5
" England and Wales	79.2	" Ireland.....	71.5

Differences in different countries are due to local causes not all explicable.

The Defective Classes.

In every community there is a number of persons who, on account of bodily or mental infirmity, do not add to the strength of the community, but are a burden. We do not mean those who are not in perfect health,—it is impossible to ascertain the number of these except from the statistics of deaths from certain diseases,—but those who are prevented by their infirmity from performing public duties or who must be supported by the community. The most general statistics we possess of these persons are the military statistics. Haushofer asserts that of all men in their 21st year 59 per cent are unfit for military duty,—22 per cent on account of under size and 37 per cent on account of disease and weak constitutions. These men are, of course, not entirely useless

to the community, but they represent a failure of effective strength.

Of mere constitutional infirmity we get no statistics. It is only where the infirmity is very marked that we can record it. The principal classes are the blind, the deaf and dumb, the insane, and the idiotic. It seems that in Europe these classes make up nearly one-half of one per cent of the population. It is difficult to give statistics of different countries that are comparable, because the rigor with which they are collected is very different, and the classification of idiots and insane is not always perfect. The latest statistics are as follows. Out of 100,000 inhabitants there are:

In	Blind.	Deaf-Mutes.	Idiots.	Insane.	Total.
Italy.....	105	74	65	99	343
Germany.....	87	96	139	88	410
Great Britain.....	98	57	129	178	462
Norway.....	136	92	119	185	532
Sweden.....	80	102	39	176	407
Belgium.....	81	43	50	92	266
France.....	83	62	114	146	405
United States.....	96	66	152	182	496

There are some national peculiarities which it is not altogether safe to insist upon because they may be due to imperfections in the statistics. Thus Norway stands out strongly with its large number of blind; Germany with the idiots; and England and the United States with the insane.

Interesting special studies may be made of these different classes of unfortunates. The males predominate over the females. In respect to age, blindness increases with age as does also insanity, while the number of deaf-mutes and of idiots decreases

with age, showing simply a higher mortality among these unfortunates than in the population at large. They are largely shut out from marriage. In Prussia, in 1880, out of 100 blind males 55 were married, widowed, or divorced, and out of 100 females 53. Of the deaf-mutes only 8.5 per cent of the males and 6 per cent of the females were married.

It is commonly said that marriage has a favorable restraining influence on insanity. For instance the statistics from Prussia give the following results as to conjugal condition of the mentally diseased (including both the insane and the idiotic.) Out of 100,000 of the population of each class there were mentally diseased:

	Males.	Females.
Among the married.....	95.	95.
" " single.....	332.	293.
" " widowed.....	321.	256.
" " divorced.....	1071.	1030.

It would thus appear that there is much less tendency to insanity among the married than among the single. It must be remembered in this case, as with all statistics of the influence of marriage, that marriage is itself a process of natural selection. In many cases the disease or the premonitory symptoms prevent marriage, and so these persons remain in the ranks of the single. Doubtless, the regularity and orderliness of married life may also have some restraining influence.

The fact that insanity increases with advancing age and is scarcely ever a disease of childhood warns us against the commonly received statement, that insanity is more frequent among the foreign-born, in proportion to their number, than among the native-born in the United States. It must be re-

membered that the foreign-born are almost all in adult life, while the native-born include a large proportion of children, so that the comparison is not a fair one. The only fair basis of comparison would be the proportion of insane among persons of the same age in the foreign and native-born population. The same remark applies to the blind, and also to the statistics of pauperism.

The Movement of Population.¹

Up to this point we have been considering the characteristics of population as it actually exists at any given moment of time. An equally important subject of observation is the changes in population, the coming and going of the population. The population of a country or of the world is not composed of the same individuals from year to year or even from day to day. It is being decreased by the death or withdrawal of certain individuals, and increased by the addition of others. It is like an army whose ranks are constantly diminished by deaths and desertions, and constantly filled up by new recruits.

Statistical observation has three questions to investigate here: (1). Is population increasing or decreasing? This is merely to establish a fact which can be established only by statistical enumeration. (2). At what rate is population increasing or decreasing? This also is merely the establishment of a fact. (3). What are the causes of the increase or the decrease? The immediate causes are, for the world at

¹For this subject see, besides the general literature, particularly Mayr, *Die Gesetzmässigkeit*, etc., William Farr, *Vital Statistics*, and Westergaard, *Die Lehre von der Mortalität und Morbidität*. For the international tables see the Italian publication, *Popolazione: Movimento dello stato civile*, 1880.

large, the relation of births and deaths to each other, and for particular countries, in addition to these, immigration and emigration.

A word may be said here in regard to the method of investigation necessary in this part of statistical work. The number and characteristics of a population may be obtained by a single census; but in studying the changes of population we must have a succession of observations at regularly recurring intervals, and, for the more important data, continued registration. It is true that by decennial or quinquennial censuses we can get at the bare fact of an increase or decrease of the population; but the reasons for the increase or decrease can not be determined. It is impossible once in ten years to ascertain all the births and deaths that have occurred during the preceding years. For this purpose we must have an official registration. So also when we try to connect the number of births and deaths with causes that may have influenced them, such as the scarcity of food,—continued observations of the price of food are necessary.

This kind of observation is more difficult than that of a mere census. In former times the church did service in this direction with its records of baptisms, marriages and burials. In modern times these have been superseded by the observations of the state, which in Europe, almost everywhere, keeps an official registration of births, deaths and marriages. The United States is singularly deficient in this respect. The federal government does not attempt any such registration for the whole country, and where the states require it, the provision is generally evaded. The result is that we have practically no

vital statistics of the United States that are of any value. Our illustrations under this head must be taken almost entirely from Europe.

Increase and Decrease of Population.

Among savage and uncivilized tribes we have remarkable examples of decrease in population: as the fading of the South Sea Islanders and the Indians of North America before the white men. But among civilized nations population is almost everywhere increasing. A remarkable exception is Ireland, where the population has steadily decreased from 8,175,124 in 1841 to 5,159,839 in 1881. The cause of this enormous decrease is emigration. In Alsace-Lorraine, after the German annexation of 1871, there was also a decrease from emigration. In some portions of France during the years 1872 to 1876, there was an absolute decrease in population due to decline in the number of marriages and the excess of deaths over births. The rate of increase varies widely in different countries, and in the same country at different periods. It is commonly expressed by the relation of the annual increase to 1,000 of the whole population, and the rapidity of increase is further measured by calculating the length of time it will take the population at that rate of increase to double its number.¹

'DOUBLING PERIOD.'					
Annual Increase.	Doubling Period.	Annual Increase.	Doubling Period.	Annual Increase.	Doubling Period.
1 per 1,000	695 years.	8 per 1,000	87 years.	15 per 1,000	46.4 years.
2 " "	348 " 9 "	9 " "	74 " 20 "	20 " "	34.8 "
3 " "	232 " 10 "	10 " "	69.6 " 25 "	25 " "	28.07 "
4 " "	174 " 11 "	11 " "	63.2 " 30 "	30 " "	23.2 "
5 " "	139 " 12 "	12 " "	58 " 40 "	40 " "	17.6 "
6 " "	116 " 13 "	13 " "	53.5 " 49.7 "	49.7 " "	
7 " "	95 " 14 "	14 " "			

The following table shows the rate of increase for long periods of time :

Country.	Period.	Annual Increase.
Saxony	1816-80	13.3 per 1,000
England and Wales.....	1831-81	12.6 ..
Prussia	1816-80	12.1 ..
Norway	1835-75	10.5 ..
Denmark	1834-80	10.1 ..
Germany	1816-80	9.4 ..
Sweden	1830-79	9.4 ..
Scotland	1831-81	9.1 ..
Holland	1839-79	8.7 ..
Austria	1850-80	7.7 ..
Great Britain and Ireland.....	1831-81	7.3 ..
Belgium	1846-76	6.9 ..
Italy	1833-78	5.8 ..
Austria-Hungary	1850-80	6.7 ..
Switzerland	1837-79	5.9 ..
Bavaria	1816-80	5.6 ..
Hungary	1850-80	5.6 ..
France	1821-76	3.9 ..
Ireland (decrease).....	1831-81	9.3 ..

It is noticeable that all the countries in the first half of the table, where the increase is largest, are, with the possible exception of Scotland, of pure Germanic blood. The United States shows from the beginning of its censuses a rate of increase greater than any in this table, running up to thirty pro mille and doubling once in twenty-three years : but the causes of that increase have been so exceptional that it is scarcely profitable to compare it with European countries.

Births.

The first thing in getting at the causes of an increase or decrease of population is the birth-rate. That is expressed by the proportion of the annual number of births to 1,000 of the entire population.

and for the countries of Europe is shown in the following table. For convenience the death-rate and marriage-rate are shown at the same time :

*Birth, Death and Marriage Rate per 1000 Inhabitants.
(Still-born excluded.)*

Country.	Births. (Annual.)	Deaths. (Annual.)	Marriages. (Annual.)
Italy (1865-1878)....	37.	per 1,000.	29.9 per 1,000.
France (1865-1877)....	25.8	"	24. " 7.6 per 1,000.
Eng. & Wales (1865-'78)....	35.6	"	22. " 8.1 "
Scotland (1865-'78)....	35.2	"	22.1 " 8.4 "
Ireland (1865-'78)....	26.7	"	17.2 " 7.2 "
Germany (1872-'78)....	39.8	"	27.1 " 5.1 "
Prussia (1865-'78)....	38.7	"	27.2 " 9.5 "
Bavaria (1865-'78)....	39.4	"	30.9 " 8.9 "
Saxony (1865-'78)....	41.7	"	28.7 " 9.2 "
Württemb'g (1865-'78)....	43.4	"	31.6 " 9.3 "
Austria (1865-'78)....	38.8	"	31.8 " 9.2 "
Hungary (1865-'77)....	41.8	"	38. " 8.7 "
Croatia & Slavonia { (1870-'78) }	44.1	"	43.7 " 10.5 "
Switzerland (1870-'78)....	30.8	"	23.8 "
Sweden (1865-'78)....	30.4	"	19.2 " 7.6 "
Norway (1865-'78)....	30.5	"	17.3 " 6.6 "
Belgium (1865-'78)....	32.1	"	23.2 " 7. "
Spain (1865-'70)....	35.7	"	31.2 " 7.5 "
Servia (1865-'78)....	43.	"	32.1 " 7.4 "
Russia (Europe) { (1865-'77) }	49.5	"	36.7 " 11.3 "

At one end of the scale stand the Slavonic nations, Russia, Croatia and Slavonia, and Servia; at the other end stand France and Ireland. The small birth-rate is characteristic of France, and is the cause of the slow increase in population; in Ireland, it is due to exceptional causes such as the emigration of persons of marriageable age. The pure Germanic countries generally have a high birth-rate, and in South Germany, particularly Bavaria, the rate is

very high indeed. England has a moderate birth-rate which, in connection with the moderate death-rate, shows a favorable condition of things.

Influences on Births.

Many attempts have been made to trace the influences which determine the birth-rate, but they have not been very successful. Climate and geographical position seem to have no appreciable influence. We find countries widely separated, such as Spain and Scotland, having the same birth-rate; while countries that are near together, like Bavaria and Switzerland, have widely different birth-rates. The seasons seem to have some influence, for we find the largest number of births almost invariably in the month of February,—corresponding to conceptions in the spring time, the month of May. Possibly there may be some physiological influence here which is partly obscured by social causes. A second increase over the usual monthly average of births is found in September, corresponding to conceptions in December. This is probably due to the crowding of marriages into the period after the harvest and during the festival time. In Catholic countries, it is found that births due to conceptions falling in the carnival time are numerous, owing to the crowding of marriages into the period before Lent. Density of population is often thought to influence the birth-rate; but it cannot be proven. Belgium, which has the densest population of any country in Europe, has a low birth-rate; while Saxony, which has also a dense population, has a very high birth-rate. Even the difference between city and country is very slight. In Prussia, for

instance, during the decade 1872–1881 the average birth-rate in the cities was 40.9 per 1000 inhabitants, and in the country, 41.2 per 1000.

It is pretty clearly established that dearness of food, hard times and wars have an influence in depressing the birth-rate. In Germany, the years 1847 and 1854, following the scarcity years 1846 and 1853, had a very low number of births. Those following the panic of 1873 showed a gradually decreasing birth-rate in most of the countries of Europe, due doubtless to the less number of marriages. The effect of the war of 1870–71 was noticed in Germany. In Prussia the average birth-rate for the years 1865 to 1878 was 37.8 pro mille. For the year 1871 it was only 33.7 pro mille. Immediately after the war there was a revival of the birth-rate, (in 1872 it was 39.7), making good the depression of the previous year.

Such are the influences which we can trace only vaguely, affecting the birth-rate. Statistics discover certain other facts connected with the birth-rate which are of interest to social science. These are the relation of the sexes, *i. e.*, the number of boys born compared with the number of girls; the number of still-born; the number of illegitimates; and the number at a birth.

Proportion of the Sexes at Birth.

This is the discovery of a purely physical law over which we have no control, and the reason for which we do not understand. It is an illustration of the value of the simplest form of the statistical method. From personal observation we could determine nothing about the relative number of boys and

girls born. In one family the children are all girls, in another all boys, in most they are partly boys and partly girls. Reasoning *a priori*, or from general observation of a great number of families we would probably say that in the long run and on the average there would be the same number of boys as girls.

Statistical observation shows, that, in the countries of Europe at least, there is a constant excess of boys. There are from 102 to 106 boys born to every 100 girls. In Italy the proportion was 107; in Austria, 106; in France, Germany, Prussia, Bavaria, Saxony, Hungary, Switzerland, Belgium, Holland, Sweden, Norway, Denmark, and Finland it was 105; in England and Wales, and Württemberg it was 104. In Greece and Roumania it ran up to the extraordinary number of 111, but the statistics cover only a few years and are not very reliable. Most of the above figures are the average for the years 1865 to 1877, and are exclusive of the still-born. If we included the still-born the excess of boys would be greater, for among these the excess is much greater than among the living. In Italy (1875), for instance, the number of boys among the still-born was 140 to 100 girls; in Prussia (1881), 128. The reason for this excess of boys over girls is entirely unknown. There are many theories as to the determination of sex, but none of them have been accepted by medical science.

The Still-Born.

A certain number of children do not survive the dangers of the act of birth. They constitute from three to four per cent of the total number of births. The number is uncertain owing to differences in the laws of different countries and the customs and the

sentiment of the people. In catholic countries, for instance, there is always a strong desire that the child shall live until after baptism, so that there is often doubtless collusion on the part of physician and parents to declare that a child was living when it was born, when in fact it was still-born. By the Code Napoleon births must be registered within three days, and children dying before registration are classed with the still-born. This increases the number of still-born in France and in those parts of Germany where the Code Napoleon prevails. Thus in the Palatinate, a protestant country with the French law, the percentage of still-born is 4.8; in Lower Bavaria, a catholic country with common law, the percentage is only 1.7

The Illegitimates.

The number of illegitimates is to a certain extent indicative of the morality of the community and so has an interest for social science. It is only partly so indicative, for the illegitimacy may be due to marriage laws such as prevailed in Bavaria, and which caused a large number of illegitimates without influencing the real morality of the people to any great extent. This is shown by the fact that as soon as the laws were abolished the number of illegitimate decreased. Thus in Bavaria the number was, in 1865, 22.47 per cent, in 1877, only 16.47 per cent of the births. The influence of the old laws still remains, but is steadily diminishing. The usual number of illegitimates in the countries of Europe is about seven per cent. The number in large cities is greater than in the country. In Prussia, in 1880, the percentage of illegitimate births

for the whole country was only 7.9; in Berlin it was 13.7 per cent; in Breslau, 15.9; in Königsberg, 18.9; in Danzig, 17; in Frankfort, 10; and in Bonn, 22 per cent. There were many more among protestants than among catholics. In Prussia, (1875-1881), the number with evangelical protestant mothers was 8.85 per cent; with catholic mothers, 5.64 per cent; with Jewish mothers, 2.73 per cent.

Multiple-Births.

The number of children at a birth is generally but one. Cases of twins or more occur in about one or two cases in a hundred births. As many as five have been born at a time. In Prussia, three such cases have been recorded during this century. The number of still-born is much greater in the case of two or more at a birth than in single births.

Marriages.

Closely connected with births is marriages; for the number of births is largely dependent on the number of marriages. Here, however, we stumble on the question of free-will,—not in so startling a form as when we come to the so-called moral and immoral actions of men, but in a similar form. In fact, it is easy to come to an agreement here, while further on it is not so easy. In the individual case, marriage is a free action,—in the choice of the person, of the time and place, etc. One can easily grant, however, that other influences might be so powerful as to override the desire of the individual, and determine the number of marriages from year to year.

These influences would be of two kinds: (1) prohibitory laws, making marriage more difficult by

requiring economic resources, or settled position, or the performance of certain public duties such as military service as a previous condition to marriage; or (2) natural influences, making the problem of existence harder and, in the case of prudent men, discouraging marriage on account of uncertain prospects for wife and child. When we consider these influences and those grouping themselves about them, such as the desire to gratify the sexual passion, to have a home and domestic comforts, the influence of law, religion and morality in restraining the indulgence of passion outside of wedlock, we should probably reach the conclusion that the power of free-will in this matter is very small indeed.

Statistical science supports this view. There is no free-will in the sense of individual caprice or power to do as one pleases. The act of marriage is controlled by great general causes which influence the individual even when he may not be aware of it. This is shown by the fact that when we have like causes we have like effects, and when we have unlike causes we have unlike effects. Mayr gives the following example of the influence of bad times in Bavaria: The years 1840 to 1845 were years of quiet prosperity with no great increase of population and no emigration to amount to anything. The number of marriages during those years was successively, 29,500, 29,463, 29,356, 29,490, and 29,373. What an astonishing regularity! One is tempted to say that the number of marriages is fixed by natural law in the same sense that the excess of boys over girls born is fixed. In 1846-7 (a bad year), the number sank to 28,331.

and in 1853-4 to 26,939, although in the intervening years it had risen to 30,000. After 1862, with the modification of the marriage laws, the number rose to 40,000 and in 1869, with the entire abolition of those laws, to nearly 60,000. That number was exceptional. The German-French war brought it down to 40,707 in 1871. The cessation of the war restored it to 52,045. Bavaria shows these influences admirably because the occurrences have been so well-defined. Hermann, in view of these facts, laid down the following rule: "The number of marriages in any period expresses the expectation of economic prosperity prevailing at that time, and expresses this the more plainly, the greater the economic freedom of the country."

The Marriage Rate.

The frequency of marriage is expressed by a marriage-rate which is the pro mille proportion of the number of marriages per annum to the entire population of the country. The marriage-rate for different countries is shown in the table on page 47. It is generally high where the birth-rate is high, but is not necessarily low where the birth-rate is low. A curious example of this is the case of France, where the marriage-rate is as high as in most countries, although the birth-rate is the lowest of all Europe. The marriage-rate is higher in cities than in the country. It varies at different seasons of the year, but the time for the celebration of marriage is so much influenced by custom and religious observations that no law is discoverable.

Brides and Bridegrooms..

Marriages occur most frequently between bachelors and maids; but widowers have a better chance of marrying a second time than do widows. In Prussia, for instance, from 1867 to 1881, out of 1000 men that married, 853.7 were bachelors, 141.4 were widowers, and 4.9 divorced men. Out of 1000 women that were married, 906.6 were maids, 88.4 were widows, and 5.0 were divorced women. The bridegrooms are everywhere older than the brides; but there are certain peculiarities which are difficult to understand. In Italy 26 per cent, and in France 27 per cent of the bridegrooms are below the age of 25. This is the customary proportion. In England and Wales, on the other hand, 53 per cent of the bridegrooms are below the age of 25. The brides in England do not seem to be very much younger than on the continent. In Italy 60 per cent of the brides are below 25 years, in France 58 per cent, and in England 64 per cent are below that age. Englishmen get married younger and take women nearer their own age than is the custom on the continent.

*Intermarriage of Different Religious Confessions
and Races.*

Where different religious confessions are represented in a population people generally marry persons of the same faith. In Prussia, in 92.8 per cent of the marriages both parties are of the same religion. The catholics seem to be the most liberal in this respect. Of evangelical bridegrooms 95 per cent married evangelical wives, 4.7 per cent catholic wives, and a small number married Jewesses. Of

Jewish bridegrooms 95.2 per cent married Jewesses, 3.9 per cent evangelical women, and 0.8 per cent catholic women. Of catholic bridegrooms 88.4 per cent married catholics, 11.4 per cent evangelical women, a small number, Jewesses.

In the United States we have the interesting problem whether the different nationalities which immigration has brought here will amalgamate by marriage so as to form a new race. This question has been as yet but partly answered. The only statistics we have are those giving the place of birth of the parents of persons when those parents were one or both of foreign birth. The number having both parents of the same nationality, although they themselves may have been born in this country, is very large, for many of the marriages must have been consummated before the parents came to this country. It appears that in the city of New York, of 10,000 persons who had Irish fathers, 9,441 had Irish mothers, 393 had mothers born in the United States, 13 had German mothers, 119 mothers born in Great Britain, and 22 British-American mothers. Of 10,000 persons in the city of New York having German fathers, 9,295 had German mothers, 482 had native-born mothers, 77 had Irish mothers, 37 mothers born in Great Britain, and 6 British-American mothers. Where the nationality is represented it tends to intermarry. Where it is not strongly represented it is compelled to marry with persons of native birth or of a different foreign nationality. Thus in Rhode Island where Germans are not numerous, of 10,000 persons having German fathers only 7,594 had German mothers, 993 had native-born mothers, 602 Irish mothers, 386 mothers

born in Great Britain, etc. There is some intermixture of blood going on in this country owing to intermarriage, but it is not very great. The statistics of Massachusetts for 1885 confirm the observations of the tenth census of the United States.

Fruitfulness of Marriage.

The fruitfulness of marriage is commonly measured by dividing the number of births in a year by the number of marriages consummated that year. It is obvious that this is only an indirect method of ascertaining that fruitfulness, for the children of any year are not borne by the women married that year. It will serve, however, as a rough measure for international comparison. In most countries there are four children to the marriage. In France there are only three.

In Massachusetts, the direct question was asked of all married women as to the number of children they had had and the number still living. The average number was 4.11 for each married woman, of which 2.83 were living and 1.28 were dead. Native-born mothers had had 3.37 children, of which 2.41 were living and 0.96 were dead. Foreign-born mothers had had 5.22 children, of which 3.46 were living and 1.76 were dead. It must be observed that this average is not indicative of the fruitfulness of the women of Massachusetts, for many of these women are newly married. Neither is it indicative of the comparative fruitfulness of native and foreign-born women, for there may be a larger proportion of newly married women among the one class than among the other. We have no general statistics that will show the average fruitfulness of women

of any country, that is, the number of children they will bear before they finish child-bearing.

In Prussia they have collected curious statistics showing the fruitfulness of marriage when the parents are of the same or of different religious confessions. When both parents are catholic the number of children is 5.21; both evangelical, 4.30; both Jewish, 4.41; evangelical and catholic, 3.23; christian and Jewish 1.60. The probable explanation of the low fruitfulness of the mixed marriages is that such marriages are apt to be contracted from motives of expediency, rather than natural affection.

Duration of Marriage.

Marriage is generally broken by the death of one of the parties. The average length of marriage can be ascertained only by the statistics of the deaths of married persons. In Prussia the married persons who died during the years 1875-81 had lived together an average of 22.4 years. When the man died first, the length was 23.2 years; when the woman died first, the length was only 21.5 years. This is due to the fact that the greatest danger to the woman's life comes with child-bearing, and hence the marriages that are broken by the death of the woman are apt to be of short duration. Marriages that have stood less than five years are broken more frequently by the death of the woman than of the man; those which have stood more than five and less than twenty-five years, much more frequently by the death of the man; after twenty-five years, by the death of the man rather than of the woman, but not so frequently. Out of 1,000 marria-

ges in Prussia broken by death, 562.9 were broken by the death of the man, and 437.1 by the death of the woman. This is explained, of course, by the fact that the husbands are older than the wives and hence die first, as well as by the greater general mortality among men.

Deaths and the Death-Rate.

The statistics of deaths are taken with a good deal of care and are of very great interest and importance. It is often assumed that the death-rate in itself is the surest indication of the health and well-being of the community. It must, however, be used with a great deal of care and with exact knowledge of what it does and does not show. The matter of real interest is the cause of the increased or decreased death-rate in each community, and it is only when we reach underneath the figures and examine these causes that we obtain results of any social value.

We start out with the annual death-rate, which is the number of deaths per annum for each one thousand of the population. The death-rate for different countries for a long series of years is shown in the table on page 47. It is closely connected with the birth-rate. Almost invariably where there is an excessive birth-rate, as in Russia, there is a high death-rate. The primary cause of this is the great mortality among infants and children. A high birth-rate also is characteristic of half civilized countries where the sanitary conditions are bad and the death-rate is thus increased. The example of England shows that it is possible to have a reasonably

large number of births and a comparatively small death-rate. Where the birth-rate is very small, as in France, the death-rate is small.

The death-rate varies at different ages, being very heavy among infants, low during middle life and increasing with old age. The general death-rate depends, therefore, very largely on the proportions of the different age-classes represented in the population. It is thus by itself utterly untrustworthy as indicative of the health of the community, and the common practice of comparing the death-rates of different cities has no sense.¹ For instance, a sudden increase in the number of births would increase the death-rate, because the addition of a number of infants to the population would have a greater effect on the deaths than on the total population, and would thus increase the death-rate, although on the whole it might have been a very healthy year. Emigration, by taking out of a country the strongest and healthiest individuals might increase the death-rate, although the sanitary condition of the country was precisely what it was before. Immigration, by adding to the population persons in the healthiest period of life might decrease the death-rate, indicating no change in the condition of the country or the habits of the people, but simply in the constituent elements of the population. The final result might even be unfavorable to the health of the community by overcrowding and competition.

Infant Mortality.

One of the saddest things in the statistics of deaths is the enormous mortality among children. From

¹ English statisticians defend it. See Farr, *Vital Statistics*, p. 111.

25 to 40 per cent of all the children brought into the world die before they have completed their fifth year. The number varies for different countries: in Italy it is 39.4 per cent; in Austria, 38.9 per cent; in Prussia, 33.4 per cent; in France, 24.9 per cent; in England and Wales, 25.3 per cent. In some parts of Germany this infant mortality is frightful. In some counties in Bavaria forty per cent of all the children born, die the first year. The cause of this enormous mortality is artificial nourishment and insufficient care.

The infant mortality in cities is greater than in the country owing to the bad sanitary arrangements, especially the crowding in tenement houses. In England it was, during the first twelve months, 14.9 per cent; in the 51 country districts, 10.3 per cent; in Liverpool, 23.4 per cent. In the city of Berlin 32 per cent of the children die during the first year.

External Influences on the Death-Rate.

No direct and consistent influence of climate and geographical position is traceable. The highest customary death-rate is in some Russian provinces, where it runs as high as 50 pro mille. Quetelet tried to divide Europe into three zones, and to show that the mortality was greatest in the southern, less in the middle, and least in the northern. Some trace of such an arrangement may be seen in the table of death-rates, but the facts do not always correspond with the law. In fact, climate seems to have a decisive influence only on strangers. The attempts of Europeans to settle in the tropics have been in vain.

Statistics have also brought out (says Haushofer) the curious fact that there is no such thing as ac-

climation by long residence. The British army in India, it has been found by experience, must be changed once in three years, for the mortality increases from year to year instead of decreasing by continuous residence. In Ceylon, out of a thousand men, 44 died the first year, 48 the second, and 49 the third. In Guiana the mortality was 77 the first year, and then steadily increased up to the tenth year, when it was 140. Algeria has cost France 150,000 men, of whom only 4,000 have been killed by the enemy; the marriage-rate and the birth-rate are both favorable among the French settlers, but the death-rate is enormous. Children of white persons, born in Eastern countries, cannot be brought up there but must be sent home.

Variations in the temperature have great influence on the death-rate. It is the extremes that kill—in cold climates the extremes of cold, and in warm climates the extremes of heat. The effect on the population is largely influenced by the age of the persons. In infancy and childhood the summer months are the most fatal. As individuals advance in age the influence of the climate becomes less and less, and the mortality is no greater in summer than in winter. As old age approaches, the cold weather kills and the winter is the fatal time.

The death-rate is generally higher in the city than in the country:

	Men.	Women
The death-rate in 51 country districts in England was 17.56 and 16.23		
" " " England and Wales at large " 23.61 " 21.28		
" " " London,..... " 26.55 " 22.34		
" " " Manchester Districts,..... " 35.38 " 30.46		
" " " Liverpool Districts,..... " 40.96 " 36.20		

In Germany the difference is not so great. In Prussia, for instance, the average death-rate for the whole

country in 1880 was 27.3 pro mille; in Breslau it was 34.3, in Berlin 31.1, in Königsberg 31.1, in Cologne 30.9, in Hanover 22.6, in Frankfort-on-the-Main 19.7 pro mille. In some of the cities it was more favorable than in the country at large. The city in fact has some advantages over the country. Its population is generally in the stronger periods of life, or at least those periods are largely represented owing to the migration of persons from the country. Medical help is easier to get; hospital service is free; charity is more easily obtained in case of want; among many classes the houses are better and the food more varied and better cooked. To offset these advantages we have the immigration of criminals and vagabonds, the wretched condition of the tenement houses, the temptations to vice, debauchery and crime.

Scarcity of food, hard times, wars, etc., have direct influence on the death-rate, as was seen in the increased number of deaths after the years 1846 in Ireland, 1853 in Germany, 1870-71 in France. It is not easy to measure the extent of such influences, because the effect on the death-rate often comes some time after the crisis has passed, in the shape of disease due to insufficient nourishment, wounds, and exposure. The only method seems to be to take the dear or bad years and watch the death-rate of that and the following years. It will generally be found that the death-rate begins to increase the year after the bad times,—sometimes during the same year. It is said that children do not suffer so much from the scarcity of food as the grown persons. The older look out for the younger, and less is saved by economizing on the child's food than

on the adult's. At first, the men show the effects of scarcity more than the women because they are working, but later the women show it more.¹

Deaths from Violence, Accident, and Disease.

The number of deaths from violence and accident is always considerable, and varies from country to country according to the nature of the occupations of the inhabitants. From 1865 to 1877 the number of such deaths out of 100 deaths from all causes was in Italy 0.9, in England and Wales 3.44, in Prussia 2.26, in Bavaria 1.49, in Switzerland 3.77, in Norway 3.91, in Sweden 3.20. They occur more frequently to men than to women, because the former are engaged in the dangerous employments, and more frequently to adults than to children for the same reason. Drowning is the most frequent of all accidents, and for that reason there are commonly more accidents in summer than in winter, especially among the agricultural population who are engaged in out-door occupations at that season.

Deaths according to disease form a most important branch of medical statistics, but it is impossible for us to go into the subject here. It is in a very confused and unsatisfactory state owing to the lack of any uniform classification in different countries. The statistical congress of 1853 tried to remedy this difficulty by recommending a uniform classification, but it was not adopted and the matter is in as bad condition as ever. Then there is nowhere a compulsory *post mortem* examination,

¹ Weisz. Einfluss von theueren un billigen Zeiten auf die Sterblichkeit.

so that in many cases the real cause of death is uncertain, and the cause returned is simply that which the physician was treating as the disease. When one considers the extreme importance of this subject to the community, one would think that there would be established everywhere a *post mortem* examination by disinterested officers, to determine the real disease and its nature. The investigation might cover many facts, such as the age, sex, conjugal condition and occupation of the deceased, the place where the disease was most prevalent, seaside or mountain, source of water supply, time of year, time of the recovery and convalescence, fatality, etc. Scarcely any of these things are now ascertained, although in England and Germany the beginnings of such investigations have been made in the case of certain diseases.¹

Social Influences on the Death-Rate.

It is often said that marriage has a favorable influence on the death-rate, and that the married have a better chance of living than the single. The influence cannot always be distinctly traced. Marriage is in itself a process of natural selection, and we should expect that its influence would be steady and in the direction of good habits and careful living. The statistics for the city of Berlin, which have been collected with considerable care, do show for the most part a less mortality among the married than among the single men. For the women, the increased care brought by marriage and the perils of childbirth seem to offset the favorable

¹See Farr, *Vital Statistics*, p. 209.

effect of married life, so that at many ages the married have a greater death-rate than the single.

There is no doubt that vice and crime add to the mortality. It is possible to trace the influence of morality on the death-rate only indirectly. One method is by the statistics of the deaths among illegitimate children. The vice shows itself in such neglect of the offspring that the mortality among them is sometimes frightful, and it is always in excess of that among the legitimates. In Prussia, in 1880, of the legitimate children 22.6 per cent died during the first year, of the illegitimate 38.8 per cent. In the large cities 28.6 per cent of the legitimates and 50.0 per cent of the illegitimates died during the first year. After that period it is difficult to trace the illegitimates except in the statistics of crime.

The social position of some classes, implying a better economic condition, renders the death-rate less among them than among the lower classes: but this is only a general statement which it is impossible to verify by exact statistics, because of the difficulty of classifying deaths according to the social position of the deceased. In Germany they have, in one or two cases, classified the deaths according to the quarter of the city and it has been found, of course, that the higher death-rate is in the quarters inhabited by the lower classes. But it is impossible to get clear-cut divisions of this sort and the higher mortality is due to the sanitary condition of the places inhabited by the lower classes.

Mortality in Occupations.

In the same general direction are the attempts to constitute by the statistics of mortality a greater or

less healthfulness of occupations. The trouble is that it may be not the occupation itself but other circumstances that influence the mortality. An occupation may be overcrowded, and the wages low and the economic condition of the persons pursuing it bad on that account. Or it may be one requiring great strength, and thus only the healthy and strong go into it. Or it may be one which the weak and the feeble may learn, and thus an undue number of that class go into it. In those cases the mortality would be affected by such a fact more than by the character of the occupation itself.

We have some interesting statistics of this sort for England, which doubtless point in a general way to the healthfulness or unhealthfulness of different employments.¹ The basis is the report of the registrar-general for 1875. The statistics cover 62 different occupations. The method is to compare the mortality of men at different ages in any one occupation with the general mortality of males for all England, and the mortality in all the 62 occupations. The table for comparison is as follows :

	All England, Pro Mille.	62 Occupations, Pro Mille.
At the age of 15 to 20 years the mortality is	6.3	4.2
" " 20 " 25 "	8.6	8.3
" " 25 " 35 "	9.8	9.7
" " 35 " 45 "	13.0	13.3
" " 45 " 55 "	18.5	19.6
" " 55 " 65 "	32.2	35.0
" " 65 " 75 "	66.8	75.6
" " 75 and over "	165.8	192.2

At first, the mortality in the 62 occupations seems to be less than in the whole population,—due proba-

¹Westergaard, Die Lehre von der Mortalität und Morbidität. Farr, Vital Statistics.

bly to the fact that in early life the occupation has no great influence and perhaps is not always given. At the age of 35 the mortality increases in the occupations, and remains above the average for the whole population.

When, now, the mortality in any particular occupation is greater than that for all England, it is said to be unfavorable. When, in the later years, it is greater than that for the 62 occupations, it is still more so. When, on the other hand, the mortality is less than that for all England, it is said to be favorable.

The results for different occupations are very general. They can be but briefly indicated here. Commercial clerks:—mortality is from 10 to 12 per cent greater than it should be, and increases with age. The reasons are obvious; they live mostly in cities, work in confined posture, are not particularly well paid, etc. The clergy in England have a favorable mortality,—only 71 per cent of that of all England, and 66 per cent of that in the 62 occupations. They live in the country, have a quiet life, an assured income even if small, little anxiety for the future. Physicians:—the mortality is 6 per cent greater than that of all England, and about the same as that of the 62 occupations notwithstanding the fact that these contain so many men of inferior social and economic condition. It is due to the exposure and irregular life. Lawyers in England are divided into barristers and attorneys; the former show a very favorable mortality, only about 62 per cent of that of all England, while among the latter it is much less favorable, being about the same as that of all England. School teachers have about the same

mortality as the whole population, but it tends to increase with age so that the occupation cannot be said to be a healthful one. In occupations carried on in the country—farmers and graziers, agricultural laborers, navvies, quarrymen, brick-makers, etc., the mortality is favorable, only from 62 to 89 per cent of all England. Railroad men, seamen, miners, glass blowers, potters, plumbers, painters and glaziers, all have unfavorable mortality on account of the danger of accident, poisoning, etc., accompanying the occupation. The tailors have a great mortality, owing to the confined posture and the apprenticing of weak boys to the trade. Textile factory operatives show a somewhat greater mortality than that of the 62 occupations. The handicrafts such as cabinet-making, blacksmithing, etc., are generally favorable. The mortality among the military during peace is less than among the whole population. In war it is naturally greater. The losses of war fall more heavily on the officers than on the privates, on the staff than on the officers of the line, on the infantry than on the cavalry.

The Average Length of Life.¹

One of the most important facts to learn about population is the length of life of the individuals composing it. The average duration and the expectation of life have important practical uses in calculating insurance tables, annuities, value of incomes, inheritances, pensions, etc. They have even greater

¹The next four paragraphs are principally on the basis of Mayr, *Die Gesetz mässigkeit*, etc., and the *Preussische Zeitschrift*, 1882. See also Farr, *Vital Statistics*.

sociological importance as measuring the economic and social prosperity of the people. In an economic view especially, they are of interest because a long average length of life means physical power and ability to contribute to the material resources of the community. Human life is divided into two periods, the unproductive and the productive. The first is necessary and must precede the second and its cost be borne by the second. In old age there also comes a period of partial or entire unproductiveness. The shorter the second period compared with the first and third, the greater the burden on the community. Dieterici calculated that the sum total of the ages of the Prussian population in 1855 was 444,281,631 years and that of these no less than 210,792,890 fell in the unproductive periods. That left 233,488,741 productive years which were to gain support for themselves and the unproductive years. If now the average length of life were reduced, it would reduce the total number of years which had to be supported, but it would reduce in still greater proportion the number of years of the productive persons. In short, the less the average length of life the harder for the population in each generation to pay for the cost of bringing itself into the world. So also, from the social point of view, long life generally means good customs, temperance, freedom from vice, etc.

There are a number of other figures which are often confused with the average length of life, or which are supposed to show the same thing. As has been already remarked, the death-rate is no indication of the general prosperity of the community; it shows nothing as to the average length of life,

although it might be supposed that a high death-rate would indicate a low average length of life. A high death-rate may be due, however, to altogether peculiar or exceptional causes, such as a high birth-rate or a large infant mortality, so that when the danger of infancy is once passed the population may be long-lived.

The Average Age of the Living.

This is obtained by adding together the ages of all the members of the community and dividing the sum by the number of persons. The average age of the living is: in England 26.4 years, in Prussia 27.50, in Denmark 27.85, in Sweden 27.66, in Belgium 28.63, in France 31.06 years. This figure shows nothing as to the relative length of life in different countries, because it is subject to peculiar circumstances. Where population is increasing, as in England, it is lower than where, as in France, population is nearly stationary, because the proportionate number of children is larger. So where a single generation started with a small number of births, or, from some cause or other, has had its numbers decreased, as that generation advances in life it contributes less than it ought to the number of persons living. For instance, the persons who were engaged in our civil war were from twenty to forty years of age. Their number was decreased. Those generations are now from forty-five to sixty-five years of age, and those ages are less heavily represented in the population than they should be, and the average age of the living is brought down by a purely accidental circumstance which happened a quarter of a century ago, and which has nothing

to do with the length of life at the present time. In Ireland, the enormous emigration forty years ago must make the number of persons from sixty to seventy years of age small, and thus bring down the average age of the living. Immigration, if of persons in the lower age periods, would have the same effect, while if of persons of advanced age or if the immigrants had been in the country a sufficient length of time, would have precisely the opposite effect.

The Average Age of the Dying.

This figure labors under the same difficulties as the average age of the living. It is obtained by taking the sum total of the ages of the persons dying in any one year and dividing it by the number of deaths. In Prussia, it was 31.10 years, in England 29.4, in Denmark 27.85, in Sweden 27.66, in Belgium 38.35, in France 40.36 years. Where there is a large number of births there is a large infant mortality, and the average age of the dying is reduced. Engel shows that in Prussia it has absolutely nothing to do with the general prosperity of the community. 1829 was a hard, cold year, but the average age of the dying was 31.31 years, the cold being fatal to the old people; 1847 was a scarcity year, and it was 28.29 years; 1851 was a good year, and it was 25.60 years.

Life or Mortality Tables.

The real average length of life can be obtained only by a combination of the number of the population, with their ages, and the number of deaths, with the ages. There are then two methods by which life

tables may be constructed, showing the average length of life and the expectation of life at each age. The first and theoretically the only correct method is the direct method. It consists in the observation of the number of births in any one year, and the exact registration of these persons as they die, until they are all dead. Take the total number of years lived by these persons and divide their sum by the total number of persons, and you will have the average length of life. Do this for a successive number of generations, and you will have the average length of life in that community. Hermann, in Bavaria, actually began such tables, and carried them on for forty years. The method is, however, impracticable for the following reasons: The observations must stretch over at least a hundred years before you have any life table. It is impossible to register all the deaths during so long a period. Some emigrate and thus escape the registration. When the list is complete after the lapse of a hundred years, the circumstances under which the population is living may have changed so much that the average is no longer of any use.

The second method is indirect, and consists in simply taking the population as it stands, and the number of deaths, and constructing an artificial table which will account for that number of deaths at each age. To do this it is necessary to have an exact registration of the number of persons dying and their ages, and an exact census of the people by ages, and it is desirable to have also a registration of the births, in order to control the ages and the number of the population. Then we take the number of persons of each age and the number of persons

of that age who died during the year, and calculate the death-rate. For instance, the death-rate in the accompanying table during the first year is 228.4 pro mille, at the age of ten years it is 5.5 pro mille. With this death-rate an ideal table is constructed, starting with 100,000 persons and having them die off according to the successive death-rates. Of course any single table of this sort may be vitiated by exceptional circumstances. If, for instance, the death-rate for persons of the age of twenty-one has been made abnormally great by a war, it would affect the table for all the remaining years. It is necessary to control this method by constructing tables on the basis of the censuses of different years, so that any exceptional influence will fall at a different place in the table; then we can take these tables and calculate the real death-rate at each age. The Prussian table (opposite) is on the basis of a comparison of more than four and a quarter million deaths, occurring during the years 1867, 1868, 1872, 1875, 1876 and 1877, with the population of those years.

The death-rate shows the probability of death at any age. During the first year it is 228 out of 1,000 or .2284; at the age of five years it is .0055. The probability of life at any age (not shown in the table) is simply the complement of this. At birth the probability of living through the year is .7716; at the age of five, it is .9945; at the age of one hundred it is .5185.

Mortality Table—Prussia. (men.)

AGE.	NUMBER OF LIVING.	DEATH-RATE. Of 1,000 in each age—there died during the next year.	PROBABLE	MEAN
			AFTER-LIFE.	AFTER-LIFE.
0	100,000	228.4	37.2	35.3
1 yr.	77,154	75.9	50.9	44.7
2 yrs.	71,297	39.4	52.9	47.4
3 "	68,483	26.3	53.3	48.3
4 "	66,681	18.7	53.2	48.6
5 "	65,433	14.2	52.7	48.5
6 "	64,503	11.5	52.1	48.2
7 "	63,751	9.3	51.5	47.8
8 "	63,158	7.4	50.8	47.2
9 "	62,688	6.2	50.0	46.6
10 "	62,296	5.5	49.1	45.9
20 "	59,123	7.6	40.5	38.0
30 "	54,041	9.7	32.6	31.1
31 "	53,514	9.9	31.9	30.4
32 "	52,982	10.1	31.1	29.7
33 "	52,446	10.5	30.3	29.0
34 "	51,891	11.0	29.5	28.3
35 "	51,318	11.5	28.8	27.7
36 "	50,725	12.0	28.0	27.0
37 "	50,113	12.6	27.2	26.3
38 "	49,481	13.1	26.5	25.6
39 "	48,829	13.7	25.7	25.0
40 "	48,157	14.3	25.0	24.3
50 "	40,306	22.2	17.9	18.0
60 "	30,159	38.6	11.7	12.4
70 "	17,337	79.0	6.7	7.7
80 "	5,361	157.1	3.7	4.6
90 "	569	253.6	2.3	3.0
100 "	9	481.5	1.1	1.4

We have thus far constructed only a death table. From this we calculate the Probable After-Life by following down the death table until one-half of the people are dead. In the table before us that is at the age of 37.2 years. At that time, of the 100,000 people who are supposed to start out together, 50,000 are dead. A new-born male child has thus an even chance of living until, or dying before the expiration of 37.2 years. We can calculate this probable after-life for any age. Of the 59,123 persons who enter the age of twenty, one-half will be dead at the age of sixty or a little over, so that the probable after-life is 40.5 years. The last column shows the Average or Mean After-Life of the survivors in any period. It is simply the sum of years the persons live through, divided by the number of persons. It is not always the same as the probable after-life, because the death rate differs at different ages. At first it is much less, because the mortality is greater in the early years than in the later. Further on it is greater, for the reason that the mortality is greater in the later years than in the earlier.¹

The above table is for men only. The table for women shows a probable after-life at birth of 41.7 years, and a mean after life of 37.9 years. The women have at all ages a greater probable after-life than the men, and at almost all periods a greater mean after-life. There are only three periods of a woman's life when she has a greater death-rate than the man. These are during the age of puberty (14 to

¹The column "Probable After-Life" is not commonly found in English life tables. On the other hand, the "Mean After-Life" is often called "Expectation of Life" in England. The continental usage is better. See Farr, *Vital Statistics*, p. 478.

16), of child-bearing (31 to 35), and during the period of advanced widowhood (77 to 93) when the woman is unable to support herself and is often destitute.

In practical use such a life table as the one here given for a whole country must be very much modified. It includes the whole population, men, women and children; the vagabonds, tramps, criminals, and the lowest classes in the community. When we come to use it for insurance we must bear in mind that the insured are a select class, and that the expectation of life among them will be greater than in the population at large. It is therefore probable that the premiums will be paid oftener than is indicated in the general table, and an insurance company must modify its table by its own experience. At the age of ten, the probable after-life according to the Prussian table is 49.1 years ; according to the Gotha Life Insurance company it is 52.9 years : according to the experience of twenty-two English life insurance companies it is 54.5 years. In the city of Berlin it is, for men, only 45.8 years. So also in all schemes for pensioning civil servants or soldiers, the table must be modified according to the character of the persons who are to enjoy the pension. In the case of civil servants it is probable that they will live longer than the population at large, and that the expense will be greater than if calculated on the ordinary tables. In the case of soldiers, the wounds and diseases they have contracted may make their life shorter.

The average length of life has a sociological interest. It is probable that it is becoming greater, owing to the better sanitary and medical care of the population. In some respects modern life brings increased

dangers and complications, but in general the ravages of starvation, violence and disease are less.

PART II.—ECONOMIC STATISTICS.

In studying the economic organization of society we find ample opportunity of applying the statistical method. Statistics first came into scientific use in the hands of political economists, and no one of the social sciences makes such constant use of them as political economy. In fact, we have here almost a super-abundance of statistical observations in the shape of statistics of imports and exports, of prices, of fluctuations in the rate of interest or discount, the amount of credit transactions, money in circulation, production of the necessaries and luxuries of life, etc. The mind is embarrassed by this profusion of figures, and the ability to put them together so as to give a true picture of industrial society as it exists, is not often found. The first function of statistical science in dealing with economic phenomena is simply descriptive. It aims to give us the grand features of the economic world in which we live, and to depict the changes that are going on there. It exercises also its second function, which is to connect the different phenomena, or to put them into such shape that they can be connected with other phenomena of human society. The statistics of wages, for instance, are not merely of interest as a contribution to the theory of distribution in political economy, but are of wider interest as descriptive of the social condition of the community. Where the condition of the community is low, it is sometimes possible to connect it with other economic phenomena such as the tenure of land, the method

of payment of wages, the consumption of alcoholic liquors, or the competition of foreign countries.

It is not intended here to give even an outline of economic statistics. That would be a long and wearisome task. Economic statistics more than any other need to be used in connection with the question to be discussed. It is the intention merely to point out the important points for statistical investigation, and to treat of the method of statistical inquiry in economics. The most important question here is always one of method, for if the method be right the results may be as they please,—we can at least argue from them; while if the method be faulty the statistics are worse than useless. It is convenient to take up the different questions in order, and for this purpose to follow the usual divisions of political economy, *i. e.*, production, distribution and exchange.

Production.¹

The general statistics of production are comparatively easy to get, and to present. They are, as a rule, simply aggregates,—so many bushels of wheat, so many tons of coal, etc. In the case of agricultural products these statistics are necessarily estimates, for there is no means of subjecting the whole mass of products to uniform and official measurement. These estimates are made from year to year and commonly in advance of harvesting the crop, for the purpose of giving information to commercial men. It is very common to take the ordinary yield as 100, and to indicate the falling off or the in-

¹The following statistics are from Neumann-Spallart. *Uebersichten der Weltwirtschaft*, 1887.

crease of this year's yield by a number below or above that. When we compare different countries it is common to indicate the yield per acre or per capita of the population, as indicating the fruitfulness of the soil or the abundance of the produce.

Food.

Gathering together the statistics of all the countries in the world, we have a picture of the way the world supports its population. Products of the earth are divided into food, raw products and luxuries. Food material consists principally of live stock and the cereals. For live stock we have statistics of the number of cattle, swine and sheep. In Europe, the number has increased during the last century, but the number per capita of the population has decreased. It is impossible to insist upon comparisons between different periods or countries, because the quality of the stock varies. A general movement is going on by which the supply of live stock is decreasing in Europe, and increasing in countries outside of Europe, which supply the former with meat. In Great Britain and Ireland, for instance, the amount of meat imported is increasing, and the home product no longer begins to supply the need. The states on the continent are also obliged to supply their deficit with importations of live stock and meat from America; and with the improvements in the means of transportation this is coming more and more to be the case.

In bread, the same thing is becoming true. In former times each country grew its own cereals; now, the countries of Europe are dependent on America and Australia for their bread. In Great Britain and

Ireland, especially, the amount of land devoted to the cultivation of wheat and the other cereals is constantly decreasing owing to American competition. Two-thirds of the wheat consumed is imported. France also imports more than she exports, as do Germany and the smaller countries on the continent. Russia and Austria-Hungary are exporting nations, although American competition has of late years diminished the exports of the former. Recently, India has also come into the European market with wheat. The United States is at present the great wheat-producing country of the world. Her superiority is due to the virgin soil of the West, the use of machinery in agriculture, and the cheapness of transportation by which the wheat of the Western states can be sold in England and the other countries of Europe. During the thirty years from 1849 to 1880, the wheat cultivation of the United States underwent an entire change. In 1849 the center of cultivation was at longitude 81 degrees west; in 1880 it was at 89 degrees and 6 minutes west. In 1880 the ten prairie states produced 70 per cent of the total wheat. The changed relations may be seen in the following table of per capita production of the different sections:¹

	1849.	1880.
The New England States.....	.4 bushels.	.3 bushels.
The North Middle States.....	5.10 "	3.43 "
The South Middle States.....	7.72 "	6.36 "
The Ohio Valley States.....	7.53 "	}
The Trans-Mississippi States.....	5.12 "	18.00 "
The Pacific States and Territories..	2.16 "	31.70 "

The yield is light compared with the countries of

¹Porter, *The West.*

Europe: in 1879 only 13.8 bushels per acre compared with 29.5 bushels in England.

Raw Materials.

The principal raw materials are coal, iron, wool and cotton. The combined statistics of the yearly production of these commodities make a grand picture of the resources of the world. The output of coal has increased enormously during the last twenty-five years,—from 136 million to 413 million metric tons. In 1885 Great Britain produced 161 million, the United States 103 million, and Germany 73 million metric tons. The fear lest the world's supply of the mineral may be exhausted seems to be groundless. It is estimated that there are in China 200,000 square miles of coal fields, in North America 193,870, in the East Indies 35,500, and in New South Wales 24,000 square miles, besides 9,000 square miles in Great Britain, 3,600 in Germany, 3,500 in Spain, 1,800 in France, and 900 in Belgium. The mines become harder to work as they are dug deeper, and it may be a question whether some day it will not be necessary to transport the labor and capital to the new countries: but even that day is far distant. In the use of coal per capita Great Britain leads the way, followed by Belgium, both countries having enormous demands for the use of coal in the iron industry. In Great Britain, during the years 1870-1885, 32.4 per cent of the coal was used in the iron industry, 21.8 per cent in the other great industries, 16.4 per cent in private houses for heating, 6.5 per cent in gas and water works, 6.4 per cent in mines, and the rest on steamships, locomotives, etc.

The annual production of iron increased from about 12 million metric tons in 1869 to nearly 20 million metric tons in 1884. Great Britain was at the head of all the nations with 7,534,000 tons : then came the United States with 4,109,000 tons, Germany with 3,653,000 tons, and France with 1,629,000 tons. The per capita consumption is not easy to specify, because iron takes on such a variety of forms in manufacture, which cannot be reduced to a single denominator, and of which we have no statistics. The iron that goes into a cast-iron stove and that which goes into a steel knife blade do not represent the same sort of consumption. The rough figures are, per capita : Great Britain 121 kilograms, United States 88, Germany 70.4, Belgium 94, and France 58 kilograms.

Of textiles, the United States is the great producer of cotton and Great Britain the largest consumer, the United States next. Of wool, Europe is barely holding its own as a producer, the United States and Australia now producing immense quantities which are largely manufactured in Great Britain. Silk is produced mainly in China and Japan, and manufactured in France. Flax and hemp are extensively produced in Russia, and Bengal has a monopoly of the production of jute.

Luxuries.'

Next to articles of food and the raw materials of manufactures come certain articles which are commonly called luxuries but the use of which is so wide spread and common that they may be termed comforts, if not necessities of life. These are sugar, coffee, tea, tobacco and alcoholic liquors. All of

them are very largely articles of importation and exportation, so that we are enabled to follow their consumption with some degree of certainty. In the growth of cane sugar, Cuba is easily at the head, the British West Indies and then the East Indies following. Germany and France have extensive production of beet-root sugar which, in some markets has driven the cane sugar out of use. The per capita consumption of sugar as an article of food would be an interesting indication of the prosperity of different peoples, for sugar is one of the comforts of life, the use of which increases with the economic well-being of the community. It is difficult to give exact figures of the consumption, because the home production is not always accurately returned, the imported sugar may be stored and not enter into consumption at the time, there are many different qualities, such as raw sugar, refined, molasses, etc., and sugar is used to some extent in manufacturing. Neumann-Spallart gives the following average per capita consumption in the principal countries : Great Britain and Ireland 30.46 kilos, the United States 18.69, Switzerland 10.54, France 10.12, Germany 6.80, Sweden 7.25, Norway 4.93, Belgium 3.52, and Italy 2.80 kilos.

Brazil is the great coffee-producing country of the world, supplying more than one-half of the total quantity consumed. Venezuela and Colombia also produce considerable quantities. In the East Indies, Java is the most important producer, followed by Sumatra, Ceylon and British India. The United States consumes the greatest absolute amount, and Germany next. The per capita consumption is reckoned by Neumann-Spallart for a series of years, 1875-

1881, to be, on the average, as follows :—Holland 7.20 kilos, Belgium 4.34, United States 3.66, Norway 3.53, Switzerland 3.01, Sweden 2.66, Germany 2.29, France 1.45, Italy 0.47, and Great Britain 0.41 kilos.

Until the beginning of the seventies, China had a virtual monopoly of the production of tea ; but since that time Japan and British India have entered the market with such considerable quantities that they have broken the Chinese monopoly. The great tea drinkers of the world, outside of Asia, are the Anglo Saxon races. The per capita consumption during the five years, 1881-1885, was as follows :—Australia 3.47 kilos, Great Britain and Ireland 2.165, Canada 1.674, United States 0.59, Holland 0.476, Russia 0.173, and Germany 0.034 kilos. It is curious to notice that the coffee consumers are small consumers of tea, and *vice versa*.

It is almost impossible to get complete statistics of the production of tobacco. In many countries it is produced at home as well as imported, so that the customs statistics are not sufficient. It is everywhere heavily taxed, so that there is great temptation to smuggle and to make false returns. The United States is the greatest producer, the cultivation of tobacco extending over twenty states, and the yield in 1884 being estimated at 541 million pounds, of the value of 44 million dollars. Cuba, of course, has an enormous export trade, and it is also produced in the other West India islands, in the East Indies, in China, Japan, and most of the countries of Europe. It is possible to make only a general estimate of the per capita consumption of tobacco. It is said to be :—in the United States 3.0 kilos, in Holland 2.8, in Belgium 2.5, Switzerland 2.3, Germany 1.9, France 0.85 and Great Britain 0.6 kilos.

Among the articles of luxury of the modern world, wine, beer and spirituous liquors occupy a prominent place. It is, unfortunately, impossible to give any exact statistics of their consumption. They are everywhere heavily taxed and are of such different qualities and values that international comparison is impossible. France is the greatest producer of wine, and also the greatest consumer. Block estimates the annual per capita consumption in France at 217 liters, in Italy at 120 liters, in Great Britain at only 2.3 liters. On the other hand, Great Britain consumes more beer than any other nation in the world in proportion to its population, its per capita consumption being estimated at 139 liters, that of Belgium at 138 liters, of Germany at 88.3 liters. The statistics of alcoholic liquors are still more untrustworthy.

Statistics of Consumption.¹

The above attempts to present the per capita consumption of various articles of food, raw materials, and the chief luxuries, suggest the notion of complete statistics of consumption, which continued from year to year would give us a picture of the economic prosperity of the community. They would serve also to compare the condition of different countries with each other, and to contrast different degrees of civilization. Besides, if complete and accurate, they might serve as a guide to commercial operations. The difficulties in the way of such

¹See three papers read before the Statistical Institute at Rome: Engel, "Sur la consommation comme mesure du bien-être des individus, des familles et des nations"; Keleti, "Sur l'alimentation en Hongrie"; Neumann-Spallart, "Sur la mesure des variations de l'état économique et social des peuples." *Bulletin de l'Institut*, 1887.

a complete statistical survey of consumption have been illustrated in the above cases. Where articles are produced at home, it is almost impossible to get the full statistics of their production. Even where they are imported, they pass into storage, are perhaps re-manufactured or re-exported, or used for a different purpose. Almost every article has different qualities or different forms which it is impossible to make comparable with each other. It is not probable that we shall ever get a complete picture of the consumption of a whole community. All we can do is to perfect the statistics of the aggregate consumption of certain important articles, and, thanks to the interest which commercial bodies and individuals are taking in this subject, these statistics are becoming more and more complete. In Germany, they have made an attempt to express the per capita consumption of principal commodities for a series of years, going back as far in some cases as 1863. But the statistics are of doubtful value, and international comparison difficult.

The Factors of Production: Land.

Such being the general features of the producing activity of the world, we turn now to the factors of production. It is easy to point out exactly what statistics can do here for political economy. It is not very much,—principally descriptive again. The first factor of production is land, and its productivity depends upon the use to which it is put, and upon the inducement to careful cultivation which the distribution of it affords the actual cultivators. We can give the statistics of the distribution of land into arable, pasture and meadow, forest, and waste

land. The great features of agricultural life in different countries will appear in this distribution. For instance, more than one-half of the surface of Belgium is ploughed land, while in Ireland one-half is pasture land, and in Sweden sixty per cent is forest. None of these statistics are very trustworthy, because they do not rest on exact surveys, but on general estimates, and land is constantly being changed from arable to pasture and back again. We can also give the average size of the farms, which indicates whether the large or the small culture prevails. It is difficult to compare different countries, for the classification varies. The statistics are misleading in one respect also, viz,—that the size of the farm is determined by the fertility of the soil and by the kind of cultivation required. The cultivation of wheat in the United States, with scarcity of labor and the use of machinery, requires much greater acreage than the *petit* cultivation of the vine or the olive by hand labor in France. Any conclusions from the relative size of farms in the United States and France would be utterly worthless. In France 56 per cent of the farms are less than twelve and one-half acres in extent, while in the United States 45 per cent are over one hundred acres; this, however, is a difference which lies in the nature of things, and not in any social custom or system of land tenure. The tenure of land has always been a subject of interest in political economy, and the science has not hesitated to point out the advantages of a tenure which will give the actual cultivator some interest in the permanent yield of the farm and in its improvement. Peasant proprietorship is illustrated by France with its 5,500,000 land owners, four-fifths of them actual

farmers; the system of large estates, by Great Britain with its land in the hands of 321,386 persons holding above one acre each.

The Factors of Production: Labor.

The second factor of production is labor. The work of producing demands a certain number of laborers, which is a matter first of all of population. Then the population is divided into the productive and the unproductive, and this we have already treated of. It is important to know the occupations in which the people of any country are engaged. These statistics are as yet in a very unsatisfactory condition. The divisions and sub-divisions are so numerous (in Massachusetts they reckon 22,000), and they run into each other in so many instances, that it is impossible to reach any scientific classification. Since the introduction of machinery, the nomenclature has been so changed that it is impossible to compare the occupations of the present day with those of fifty years ago. For the same reason, it is impossible to compare a country advanced in the use of machinery with one less advanced. In the rural districts, again, the same man often pursues two or more occupations at the same time, as he may be both farmer and store-keeper, etc. For these reasons, the general statistics of occupations are not of very great value. They serve only to give a grand outline of the way the people of a country carry on the work of production. Agriculture demands the labor of the greater part of the human race, so that it may still be denominated the foundation occupation of man. In the United States 44.1 per cent, in France 48.8 per cent, in Germany 42.5 per cent, in England

only 13.2 per cent of the population are engaged in agriculture.

The Productiveness of Labor.

This depends largely on the number of hours the laborer works during the day. It would be an interesting statistical inquiry to determine exactly how much the laborer produces in days of varying length. The Massachusetts bureau of labor statistics investigated the question for the textile industries of that state, and came to the conclusion that "Massachusetts with her ten hours produces as much per man or per loom or per spindle equal grades being considered, as other states with eleven or more hours; and also wages rule as high if not higher." It is obvious that there must be a limit to the reduction of hours, and it is an interesting and difficult problem to say just when that point has been reached. In Germany, it is claimed that eleven hours is the most productive labor day. This brings us to another statistical problem, that is.—to determine the efficiency of the laborer. This can be gauged only by the quantity and quality of the product he can turn out in a given time. In textile factories this is often measured by the number of spindles or looms he can tend, and the rapidity of their motion.

The productiveness of labor depends, again, on the way in which it is applied. The most important element here, in modern times, is the introduction of steam as a substitute for human muscle. Engel estimates, that, in less than forty years, Prussia has added to the power of the nation a force equal to 9,000,000 horses, or nearly 64,000,000 men. It would

be utterly impossible for Prussia to support the men necessary to do the work of these steam engines.

The Division of Labor.

This is almost as important in the modern industrial process as the employment of machinery. It is not possible to follow it out statistically except in the bare enumeration of the different occupations, as in the Massachusetts census of 1885, or in the distinction between the large and small industry. It is, of course, difficult to draw the line exactly between the large industry and the small, or between factories and workshops. In Prussia, in 1875, industries were classified according to the number of men they employed. Out of 1,667,104 factories and workshops, 1,623,591 employed 5 or less men, 17,685 from 6 to 10 men, 20,474 from 11 to 50 men, 4,362 from 51 to 200 men, 905 from 201 to 1,000 men, and 87 over 1000 men. Of the employees 2,246,959 were employed in the small workshops, *i. e.*, those with five or less workmen, 1,378,-959 in the large factories. The small industry may be said to have a firm hold still in Prussia. The chief importance in this classification is the social position accompanying the occupation. In the large industry the mass of the men are in the position of wage-receivers, with no immediate interest in the business, and without any chance of advancement. In Prussia, of all the persons in the small industry, 72.56 per cent were proprietors or managers, and 27.44 per cent assistants, laborers, and apprentices; in the large industry, 3.65 per cent were proprietors and managers, 4.98 per cent were salesmen, superintendents, etc., and 91.37 per cent were laborers and apprentices.

Emigration and Immigration.¹

The supply of labor and competition among the laboring class are affected in the modern community by emigration and immigration. These are comparatively modern phenomena. In former ages men sometimes changed their domicile from religious or political motives. But the effort was so great, the dangers so numerous and unknowable, that emigration was always small and only under the most powerful feelings. During the last forty years all this has changed. The knowledge of foreign countries has spread; the means of transportation have improved and are cheaper: and now thousands of human beings expatriate themselves every year from no other motive than to better their economic condition. For the United States particularly, (for by far the greater part of the emigration is from Europe to this country), immigration is a very powerful factor in its political and economic development. Since the year 1820 more than fourteen million persons have come to this country.

Our statistics of this movement are pretty complete, or may be made complete by the combination of the statistics of emigration with those of immigration. In some countries of Europe they require a permit to leave the country, and thus pretend to keep an accurate record of all emigrants.

¹Complete statistics of emigration are to be found in the Italian publication, *Statistica della Emigrazione Italiana*, 1886. See also, *Emigration and Immigration: Reports of Consular Officers of the United States*. Washington, 1887. I have attempted to analyze the effect of immigration on the United States in three articles in the *Political Science Quarterly*, for March, June, and September, 1888; and in the *Bulletin de l'Institut international de statistique*, 1888.

With the modern means of transportation these records are always deficient, for many leave without getting a permit. More accurate are the statistics of those sailing from the principal seaports. In addition, we have the record of those landing at the seaports of the United States. These three figures never correspond. In 1880 for instance, the number of Germans with permits to leave and settle in the United States was 21,251; the number of Germans leaving the ports of Bremen, Hamburg, Stettin, and Antwerp was 103,115; the number of Germans arriving in the United States was 134,040.

The fluctuations in the number of emigrants from year to year seem to be determined principally by economic causes. Bad times in Europe, such as the Irish famine of 1846 and the German scarcity of 1853, result in an enormous flood of emigrants; bad times in the United States, such as the civil war of 1862-3 or the crisis of 1873, result in a decrease of immigration. There are always more men than women among the immigrants. Of those that come to the United States about 60 per cent are males. The immigrants are in the most productive period of manhood and womanhood; 80 per cent are fifteen years of age and over. Three-fourths of them are unskilled laborers.

Emigration does not seem to have any great influence on population, because the places of the immigrants are immediately filled up by births. Thus in Germany from 1875 to 1880, the excess of births over deaths was 2,887,882; the actual increase of the population by the census was 2,506,689, showing a loss by emigration of 381,193. Only in Ireland is there an actual decrease caused by emigration. The

effect on population is best measured by comparing the number of emigrants per 1000 of the population with the excess of births over deaths per 1000 of the population. In 1885 the emigration was: from England and Wales 4.59, from Scotland 5.47, from Ireland 12.20 per 1000 of the population; the excess of births over deaths was 13.50, 13.18 and 5.11 per 1000.

Immigration, naturally, causes an increase of population. There is, first, the actual addition of the immigrants to the population, and secondly the excess of their births over their deaths. It is impossible to follow this out accurately, because the immigrants and their descendants are not distinguished from the natives, after the first generation of children. Thus, while in 1880 the number of foreign-born persons in the United States was 6,679,943, the number of persons having one or both parents foreign-born (including the above) was 14,922,744. But many of the immigrants had been here long enough to be represented by grandchildren or great-grandchildren, and, guessing at the number of these, it seems probable that at least twenty millions of the inhabitants of the United States in 1880 were immigrants or the descendants of the immigrants since 1790. A second method of estimating this number is by taking the rate of increase of population as indicated by the censuses of the United States, deducting the increase due to immigration and the natural increase of immigrants during the decade, and then allowing to the native and the immigrant population the same rate of increase during the decade. This gives about the same result as above.¹

¹See above, p. 24.

The economic effects of emigration and immigration must be very important. By emigration there is a constant abstraction of persons who are in the most valuable period of human life. The native country of the emigrant has had all the expense and trouble of rearing him, and then loses him just as he is beginning to repay this expense. The country that receives the immigrant has that number of able-bodied persons added gratis to its laboring or productive population. The measurement of this economic gain is not easy. One common method is to calculate the cost of bringing up a child to the age when it is able to support itself, and to count every adult immigrant as worth that sum. Thus Engel estimated that it cost 754 thalers to rear a German child to the age of fifteen, when it was presumably able to support itself. Every immigrant we get above the age of fifteen is worth that sum to us, for that is what we have been saved. This estimate is a fallacious one. The value of the immigrant laborer is not what he cost the old country, but the amount of wealth he will produce in the new. From this we will have to deduct, naturally, the cost of maintaining him during the remainder of his life. This is the economic value of the man. In order to ascertain, therefore, the economic gain by immigration we must know the rate of wages, the cost of living, and the ages of the immigrants. Capitalizing the difference between the rate of wages and the cost of maintenance according to the expectation of life, we shall have the present value of the man. By this method Dr. William Farr estimated that the value of the emigrants leaving England in 1876 was £175 per capita, and that the money value of

the 8,000,000 people that left England during the years 1837-1876 was 1400 million pounds sterling, or on an average about £35,000,000 a year.

The Factors of Production: Capital.¹

The third factor of production is capital, and it is equally important with land and labor. It is of interest to investigate, in each country, the total amount of capital and its relation to the total national wealth, its distribution over different parts of the country and in different industries, whether it is circulating or fixed capital, its increase or decrease, etc. International statistics on these points would be extremely valuable. It is, however, a difficult and arduous task to collect such statistics, and the statements of individuals are not always to be relied upon. Even where the persons making returns are entirely honest, the returns themselves are not always homogeneous. All business is conducted on credit, and this credit acts as capital, even where it consists only in extension of time in which to pay for goods. One firm of manufacturers may own their building and return it as part of their capital as it really is, while another firm engaged in the same business may rent their building and not put it in as capital. The capital stock or the bonded indebtedness of stock companies and corporations may or may not represent the full amount of the capital on which they are doing business. In many cases, the stock has been watered: in others profits have been put back into the business without increasing the nominal amount of capital.

¹Giffen, Essays in Finance. C. D. Wright, Problems of the Census. C. F. Pidgin, Practical Statistics.

Statisticians have confined their efforts for the most part to estimating the national capital; and this is often taken to be identical with the national wealth, a distinction being drawn between that part which bears an income and that which does not. Thus Giffen, on the basis of the income tax, calculates the income-bearing wealth of Great Britain as £8,548,120,000. This was in 1875. In 1865 the amount was £6,113,000,000, an increase of nearly 40 per cent in ten years. While population was increasing at the rate of about one per cent per annum, wealth increased at the rate of four per cent per annum. The increase during the decade was three times sufficient to pay the national debt, and the nation could have afforded to lose one-fourth of all its property and would still have been as rich per capita as in 1865, notwithstanding the increase in population. For the United States, all we have is the estimate of the census of 1880, which made the total wealth of the United States equal to 43,000 million dollars.

Distribution.

By distribution is meant, technically in political economy, the division of the product among the persons who have contributed to produce it; and economists distinguish rent, interest, profits, and wages. The recipients of these four portions are not always distinct persons. The capitalist may at the same time be land-owner and employer, and the interest on his capital be inextricably intermingled with his rent and profits. There is scarcely any pure rent, for almost all land has been improved and the nominal rent includes some interest on capital invested. There is also scarcely any pure profit, for almost

every employer is at the same time capitalist to a greater or less extent, and his nominal profits cover interest on capital and compensation for risk which it is impossible to insure against. We cannot distinguish rent and profits accurately enough to have any statistics of them, even if the technical difficulty of inducing men to reveal their real rent or real profits were not insuperable. All attempts to get at profits by estimating the total value of the output and comparing it with the sum spent on raw materials and on wages are fallacious, because they do not take into account the risk, the other items of expense, the amount of capital actually in use, etc. So also, to average the dividends of railroad companies and compare them with the amount of capital stock is of no value, because it takes no account of watered stock, etc. Even statistics of the rate of interest and discount take on the form of a mere record of the fluctuations from time to time, because interest varies according to security, and we must proceed on the basis of perfectly good security. There is no such thing as an average rate of interest, at the same time, on the same security. The only share of the product that we can follow out statistically is wages, and we can follow them out solely because there are a number of men who stand together as a class, namely, the wage-receivers. Even here we can study wages statistically, not as a share of the product and in its relation to other shares, but only as a question of income,—the income of a large number of persons. The statistics of wages have interest, therefore, not as a solution of the law of distribution, but as an answer to the social question of the well-being of a number of persons in the community.

Wage-Statistics.¹

It is well recognized, now, that there are three parts to statistics of wages: the money wages reduced to such a form that we can tell about what the command of laborers over money is: the cost of living, that is, the prices of the articles which the laborer consumes; and the relative share of the laborer's income absorbed by these different articles.

It seems probable that the best way to get the money wages is from the large employers,—the working men themselves being too ignorant or too interested to give correct and unbiased returns. It is best to get *actual* wages, and the number of men employed at each actual wage; estimates are apt to err on one side or the other. In averaging wages, care must be used to take persons of a homogeneous class. For instance, there is no sense in averaging the wages of men, women and children in an employment; the average is too strongly affected by the relative number of each to be indicative of anything in the social condition of the class. So also, it is useless to average the wages of skilled and unskilled workmen,—the average is neither the one thing nor the other. It is better for these reasons to arrange the wages by classes:—so and so many labo-

¹Victor Böhmert, Die Methoden der Lohnstatistik in *Zeitschrift des Sächsischen statistischen Bureaus*, 1885, Heft III und IV; Reports of Massachusetts Bureau of Labor Statistics, 1884, 1885 and 1886; Edward Atkinson, The Distribution of Products; Leone Levi, Wages and Earnings of the Working Classes. I have criticised the attempts to get wage statistics in the United States in an article on American Labor Statistics, *Political Science Quarterly*, March, 1886; and in Wage Statistics and the Next Census, *Quarterly Journal of Economics*, July, 1888.

mers receive from one to two dollars per day, so and so many from two to three dollars per day, and so on. This enables us to decide upon the actual income of a large number of persons in the community, without committing ourselves to any fixed average which may have been affected by accidental circumstances.

The cost of living for workingmen has been analyzed most successfully in the investigations of Mr. Edward Atkinson and the Massachusetts bureau of statistics of labor, by collecting from boarding houses and workmen's families the exact items of expenditure. From these returns it would appear that food can be furnished in this country for from twenty to twenty-five cents per day for each adult person. To this must be added the other items, rent, fuel, medical attendance, etc.

The relative importance of these items is ascertained from workmen's budgets; and it appears that a Massachusetts workingman with an income of \$754 per annum spends 49.3 per cent of it for food, 18 per cent for clothing, 12 per cent for lodging, 5 per cent for fuel, 5.5 per cent for education, etc., 3 per cent for medical attendance, 3.5 per cent for recreation. It appears from this and other investigations that the lower the income the greater the proportionate amount spent for bare subsistence.

With these three facts, amount of wages, cost of living, and items of expenditure, it is possible to determine how many of the working men in the community are able to earn enough to afford them a comfortable subsistence. There are, of course, a number of minor difficulties besetting statistics of wages, such as the number of idle days, the opportunity for extra work, the interval of payments, pay-

ment in truck, etc., which it is necessary to pass over here, although they often affect the prosperity of the laborer.

One of the desirable things in statistics of wages is to institute a comparison between different countries, or at successive periods of time, in order to determine the relative prosperity of the laboring class in various places, and past and present. Either comparison is difficult. When we compare the laborers of one country with those of another, it is found impossible to co-ordinate industry with industry, because, owing to variations in technique, the labor may not be of the same class. In one country, machinery may be extensively used and the number of women and children employed in that particular industry be larger than in a second. Any average wage in the two countries would be misleading from the simple fact of its representing, in the one case, the wage of adult skilled labor, and, in the other, that of unskilled, or female and half-grown labor. Possibly a classification of wages would give us the comparative incomes of the working classes in the two countries. The comparison between past and present wages shatters on the same difficulty of unlike employments,—a cotton spinner now not being the same thing as a cotton spinner of fifty years ago,—and on the further difficulty that we lack the data for former years. Mr. Robert Giffen's essay on the "Progress of the Working Classes" is a notable attempt to prove that the laborers are better off now than they were fifty years ago, but an examination of the data given in that essay and in a subsequent one devoted to the same subject shows that they are historical rather than statistical in their character. Statistics have not yet

successfully solved this problem, but there is evidence that, with improved methods, the science will make some important contributions to this interesting question.

Relative Incomes.

Wage-statistics lead naturally to the question of the general distribution of wealth among the different members of the community, and especially to the vexed question of the relative growth of small and of large incomes. It is often said that the rich are growing richer, and the poor, poorer. It is already plain that statistics cannot answer this question directly. We can have no general census of incomes, for many men can not give their true income, and many will not. We can only get at it indirectly, from an analysis of income tax returns, of wages, of inheritance and probate duties, etc., which taken together will give us a picture of the condition of the various classes in the community. Giffen has made a contribution to this subject in the well-known essays mentioned above. The general result of the English investigations is to show that the middle incomes are increasing at the greatest rate, while the growth of wealth in modern countries is coming to the good of all classes in a general improvement of the standard of comfort and well-being. Some Prussian returns, given in the table below, do not appear to point in exactly the same direction. None of these returns satisfactorily answer the question of well-being, because there is much in legislation, governmental action, public opinion and education, that comes to the good of the working classes, but which cannot be measured statistically. Finally, there are many other statistics, such as those of pau-

perism, of savings-banks, of education, of temperance, of vice and crime, of mortality, etc., which disclose facts having an important but indirect bearing on the well-being of the community.

Increase in Incomes—Prussia, 1852–1873.

INCOMES.	Number of Contributors increased from 100 in 1852 to				
	In 1855.	In 1860.	In 1865.	In 1870.	In 1873.
A. Class-Tax.					
Under 300 dols....	104.0	109.8	116.9	122.4	122.8
300-750 " "	120.6	149.4	158.2	167.3	175.5
Up to 750 " "	104.4	110.7	117.9	123.4	124.0
B. Income-tax.					
750- 1,200 dols	114.0	134.7	154.7	187.0	210.2
1,200- 2,400 "	114.8	141.0	168.0	193.0	232.3
2,400- 4,500 "	119.6	142.3	174.7	207.1	255.9
4,500- 9,000 "	117.4	158.3	195.7	238.4	324.8
9,000- 18,000 "	132.3	166.7	233.0	314.5	470.6
18,000- 39,000 "	133.8	175.0	206.3	295.0	576.3
39,000- 75,000 "	105.3	157.7	168.4	242.1	568.4
75,000-150,000 "	83.4	150.0	150.0	300.0	533.3
Over 150,000 "	400.0	300.0	400.0	700.0	2200.0
Over 750 " "	115.0	137.7	160.0	192.8	225.7

Exchange.¹

The value of statistics in the department of exchange is principally descriptive. We have first of all the means of transportation,—railroads and shipping. Statistics give us a picture of the growth of railroads, the annual increase in mileage, the amount of rolling stock, the tonnage per mile, the number of passengers, the number of accidents, the cost of the road, the gross earnings and expenses,

¹Neumann-Spallart, Uebersichten der Weltwirtschaft; Robert Giffen, Essays in Finance, Second Series; Institut international de statistique, Comité de la statistique commerciale, *Bulletin*, 1887.

etc. The railroad facilities of a country may be measured either by the number of miles of road per capita of the population, or the number of miles of road per square mile of territory, or the train service per inhabitant, that is, the total number of miles run by passenger trains during the year divided by the number of inhabitants of the country. None of these methods is very satisfactory. In shipping, we can note the number and tonnage of vessels, the distribution of tonnage among the different nations of the world, or in different bodies of water. For instance, in former times the center of commerce was in the Mediterranean; now it is on the North-Atlantic coast and in the German ocean. Steam vessels are rapidly superseding sailing vessels, so that more than one-half of the ocean freight is now carried by steam.

Imports and Exports.

The great international movements of commodities are shown by the statistics of imports and exports. These statistics are of increasing interest and importance as portraying for us the commercial intercourse of the world. It is impossible but that, as they are perfected and made accurate, they will give us the solution of some of the problems of international exchange. The administrative difficulties in the way of making them complete and accurate prevent their being of as much value as they might be. Statistics of imports and exports should give both the quantity and the value of the articles. The former is given in the bill of lading. The latter is dependent on the declaration of the merchant or the appraisal of the custom house officer.

If the article pays a duty, the valuation is often too low; if it enters free, the valuation is often carelessly made. There is no uniform system of classification for all countries, so that a comparison of the imports of one country with the corresponding exports from another is difficult. So too, the destination of the goods is often recorded carelessly, or the final destination may not be known to the shipper himself. Such are some of the difficulties in the way of our statistics being what they ought to be, namely,—a complete picture of the commercial intercourse among the nations of the world.

The statistics of imports and exports are often used as indicating, by their increase or decrease, the prosperity of a country. It is common to take, for this purpose, simply the money value from year to year. This money value is affected, however, by the price as well as by the quantity. The money value of the imports may have decreased simply because prices have gone down. The ability of the country to consume is the same as before, only it has to pay less for what it consumes. The only way to avoid such fallacies is by combining the price with the quantity. One way to do this is to estimate what the commodities would have cost at the prices prevailing the year before. It is, however, extremely difficult to carry on this comparison so as to cover a series of years.

Prices.

The statistics of prices are very important and at the same time extremely difficult to handle. There is an abundance of material, for the commercial organizations, such as boards of trade, chambers of commerce, etc., are registering daily the prices in

the transactions carried on among them. The difficulty is to get some sort of average which shall express the fluctuations from day to day and from year to year. The common expedient is to take the highest and the lowest prices of the day or the year, or the average between the two. This average is a mere numerical one and amounts to nothing, for one extreme may have been due to entirely exceptional causes. For instance, if during a day 100,000 bushels of wheat are sold at \$1.00 and 1000 bushels at \$1.02, the average price of wheat to the purchasers of wheat that day is not \$1.01, but is much nearer \$1.00. The only correct average is attained by taking into account the quantity as well as the price; but with the thousands of transactions taking place every day, that would be an enormous task.

The difficulty only increases when we try to combine the average prices of many different commodities, in order to tell whether prices in general have risen or fallen. This is commonly done by a so-called "index number."¹ A list of the more important articles is made, and the prices of these articles are taken for a year or for a series of years. The combination of these prices is used as a base number, and is represented by, (say), 100. If the combination of the prices of these same articles for any subsequent year is greater than the base number, then prices have risen, and they have risen in proportion as the number is greater, on the basis of 100. There are numerous difficulties with an index number, although the idea in itself is a correct one. One

¹Papers by M. Beanjon and Robert Giffen on "Index Numbers" in *Bulletin de l'Institut international de Statistique*, 1887.

is in choosing the articles which shall be included in the number. One article may be important because of the quantity consumed, another on account of the quantity exported, a third because it is a necessary of life. When a list is made out it must be used for all future time, but in the course of time some articles may have sunk into insignificance, and others which had not been included may have acquired prominence. Then again, shall all the articles have an equal weight in making out the index number? In England, shall copper have the same weight as iron, silk as cotton? If we try to assign different weights, then new and subjective judgments must be made which will influence the number but may not command general assent. Finally, the price of labor, the most important commodity of all, is not commonly included in an index number, although a rise or fall in it is of the utmost importance both to the laborer and to the manufacturer or employer. It is safe to say that we have not yet reached the perfect index number.

The counterpart of these statistics of prices is the statistics of money and the means of credit, for prices are affected by the quantity of money in circulation.¹ The actual amount of specie money in circulation can be arrived at only indirectly. The mint records are not final, because the coins may have been melted down or exported. They serve as a basis for an estimate and may be combined with the statistics of imports and exports, the quantity lying in bank-

¹See particularly Soetbeer, Production of the Precious Metals, translated by Professor Taussig and published by the Department of State in Consular Reports, December, 1887.

vaults, etc., to estimate the quantity in the country. The amount of mercantile credit can be estimated from the transactions of banks and clearing houses. The effect of all this on prices, however, is for the most part conjecture.

PART III.—STATISTICS OF VICE AND CRIME.¹

We include under "Moral Statistics," according to Mayr, the statistics of all those actions of men which may be traced to ethical motives or to the influence of moral or immoral circumstances. In many respects it is the most interesting field of statistical inquiry. The actions themselves are of deep concern to the community and to the individual, and any theory in regard to them is sure to awaken considerable interest. Above all, it is these actions for which we hold men responsible and for which we punish them if they transgress, and any investigation which seems to show influences affecting the freedom of the individual to do or not to do as he pleases, has an important influence in determining our position towards the guilty person, and our theory of social action. These statistics have but an indirect bearing on economics and hence will be treated here very briefly, only a few examples being given in order to furnish illustrations of the effect of statistical inquiry upon the doctrine of the freedom of the will.

¹Von Oettingen, Moral statistik; Morselli, Suicide; Mayr, Die Gesetzmässigkeit, etc.; Movimento della Delinquenza 1873-1883. (besides Italian statistics contains international comparison of frequency of principal crimes); Starke, Verbrechen und Verbrecher in Preussen.

Passing over the statistics of suicide and of vice, the former of which furnish interesting data for the determination of the influence of race, of climate, and of external circumstances over the so-called free actions of men, but which are of less importance than the statistics of crime in general, we proceed directly to the latter. It is well to point out here that the value of the results of criminal statistics has been greatly exaggerated. They are not complete enough to admit of international comparison, or to bring into intimate connection with national characteristics and customs, as has often been done. The classification of crimes is so different in different countries,—there being often included under one general name, a variety of acts which would not be included under that name in another country; the administration of justice is so different, in some countries with trial by jury, in others by judges with summary jurisdiction; the efficiency of the police force in the detection and arrest of the criminal is so various:—that any international comparison of criminality is apt to be misleading.

Even in any one country, it is difficult to measure the extent of the criminality. A large amount escapes detection or conviction. Shall we pay any attention to those who are arrested, or accused of crime, but who are acquitted from insufficient evidence? Again, how shall we value the different kinds of crime? Murder and arson show an entirely different disposition, and are of different import to the community, from petty larceny and drunkenness. It is necessary to divide the crimes into the more and the less serious, and to trace the history of each. Further, the most important question of all is the cause of crime.

Here we have the evidence of the prosecution, which is not altogether reliable because its object is to convict the man. We have also the history of the criminal himself, his parentage, his occupation, his age, etc.; but these things are not always given in as complete a form as is desirable. With all these difficulties, there are still certain general features of the world of crime which statistics bring out.

Kinds and Causes of Crime.

Statistics show a great regularity in the amount of crime from year to year. In England, for instance, the number of crimes is shown in the following table :

	INDICTABLE OFFENCES. Annual.	PER 1000 OF POP.	NO. PERSONS CONDENMED TO IMPRISONMENT. Annual.	PER 1000 OF POP
1857-61	53,674	2.72	128,767	6.54
1862-66	51,658	2.47	139,941	6.72
1867-71	54,036	2.43	161,369	7.27
1872-76	46,718	1.97	167,354	7.67
1877	50,843	2.07	187,412	7.63
1878	54,065	2.14	188,060	7.47
1879	52,447	2.08		
1879-80	52,427	2.06		

Considering the enormous economic and social changes that have taken place during the period, the regularity is astonishing. Of the indictable offences in 1879-80, 75 per cent were crimes against property without violence, 13 per cent were against property with violence, and 5.4 per cent were against the person. This proportion of crimes against the person compared with those against property varies greatly in different countries, and is apparently influenced by a great many things such as climate, the season of the year, economic condition, race, sex, etc.

Crime is more frequent in the city than in the country, a fact that is easily accounted for by the age of the city population and by the attractiveness of city life to those with vicious tastes. There are generally four men to one woman among the criminals; and the criminal age is that between 30 and 40. There is less crime among the married than among the unmarried, although there are some exceptional returns. The criminal class are for the most part illiterate; and there is a close connection between the criminal and the vicious classes. In regard to occupations, the great mass of criminals come from the lower classes, the laborers, charwomen, etc. The influence of scarcity of food is plainly discernible in the increase of crimes, especially those against property. The individual psychological motive is difficult to ascertain, because it is usually concealed by the defence. In the crimes against the person, the passions play an important part ; and even in crimes against property such as arson.—revenge, envy and covetousness have great influence.

Effect of Penalties.

The penalties seem to have little deterring effect. The number of habitual criminals is always very great. In England the number of habitual offenders, that is criminals who had been punished before, was 40 per cent of the whole. Of these 35.5 per cent had been punished once before, 16.1 per cent twice, 9.8 per cent three times, 7 per cent four times, 5 per cent five times, 6.8 per cent 6 to 7 times, 6.3 per cent 8 to 10 times, and 13.5 per cent over 10 times before. It is these figures showing the connection of crime with ignorance, vice, poverty, bad social surroundings, in-

temperance, etc., and the persistence of the criminal in a course of conduct the bitter fruits of which he has already tasted, that make us more disposed to treat crime as a disease of the social body than as a sin of the individual and a product of the free-will of the sinner. It is safe to say, that in the refinement of criminal statistics we have the hope of reaching some definite comprehension of those actions of the individual which seem so destructive to his own happiness and to the welfare of the community. Into the refinements of this study we are not able to enter in this brief monograph.

III.

STATISTICAL METHOD OR STATISTICAL SCIENCE?

It will have become plain by the above outline of statistics, that, as was mentioned in the introduction, they are useful to us in three ways, viz: (1) merely descriptive,—for instance, the amount of coal produced in different countries; (2) as revealing by the observation of a large number of cases certain facts which are not otherwise revealed,—for instance, the average duration of human life or the death-rate at different ages; and (3) finally, as bringing phenomena into juxtaposition so that one is the explanation of another,—the number of marriages and the price of wheat. It is a mooted question whether the body of knowledge thus brought together deserves the name of a *science*, or whether it is simply a *method* of getting material for other sciences. The question is not a merely formal one, for upon its answer depends

the position of the statistician and the authority with which he speaks. There are two divergent views which we may briefly characterize as the English and the Continental.

The English View.

This has been best set forth by Mr. Wynnard Hooper in a paper read before the London Statistical Society, and which met the assent of most of the members present.¹ The author agrees with the assertion made by Professor Ingram at the meeting of the Social Science Association at Dublin in 1878:

"It is plain that though Statistics may be combined with Sociology in the title of Section F., the two cannot occupy a co-ordinate position. For it is impossible to vindicate for statistics the character of a science; they constitute only one of the aids or minicula of science."

Mr. Hooper sustains this position by the following arguments:—If we examine the phenomena revealed to us by statistics, they will be found to be simply phenomena of human life such as are already dealt with in sociology. To use the term statistical science would be to supersede the term sociology. At the present time the latter science is already divided into well recognized sub-sciences, political economy for instance, each dealing with phenomena of a certain kind. To make statistics a science would be to introduce a cross division that would be extremely puzzling. Then again, although statistics already furnish valuable material for other sciences such as political economy, political science, etc., they are not at all complete enough to form a science by themselves.

Rejecting therefore the term statistical science, Mr.

¹Journal of the London Statistical Society, March, 1881.

Hooper gives the following definitions: By the term statistics we always mean statistics of something, as the number of bags of coffee in the London warehouses at a certain time, or the receipts of the London and Northwestern railroad during a week. The statistical method is a scientific procedure involving the use of statistics. It includes not only the processes by which the statistical quantities are dealt with, *e. g.* noting the difference between the statistics of the coffee of one week and those of the corresponding week of the preceding year, but also the superintendence of the processes by which the primary statistical quantities are obtained. "I regard statistics, which I shall in future call statistical analysis, as a method of scientific inquiry, a certain Instrument of scientific investigation whether it is applied to sociology, to meteorology or to any other science. In saying that it is an instrument I mean that its purpose is to enable us to perceive and measure with more or less accuracy phenomena which we could neither perceive nor measure otherwise. In the service it renders to man it is therefore analogous to the microscope which enables us to perceive magnitudes, and to the polariscope which enables us to perceive tints that are not otherwise perceptible to us."

It must be confessed that the views expressed above correspond to the general notion of statistics prevailing in England and the United States. By statistics we commonly mean the figures expressing certain numerical facts, and our only books on statistics are the almanacs and handbooks containing these long and elaborate tables of figures. We have in the English language no word corresponding to the

German "*Statistik*," or to the French "*la statistique*," expressing the science as well as the material. The science of statistics is in a good deal the same position that political economy would have been in if we had continued to use the term "political arithmetic," instead of the modern "political economy." On the continent, however, the leading statisticians such as Mayr, Engel, Block, Bodio, Morpurgo, etc., are unanimous in desiring to use the term statistical science, and not to treat statistics merely as a method. When we consider that these men have done more than any others to develop statistical methods and knowledge, and also that they are not mere doctrinaires, but the heads of statistical bureaux and practical men, it will be worth our while to examine their reasons for desiring this. Their views are as well expressed by Mayr as by any one, and we will content ourselves by quoting him.

The Continental View.

Mayr desires to use both the terms statistical or numerical method, and statistical science. The method we can use in natural science, as well as in the social sciences. We can have statistical observations of the temperature or the annual rainfall, just as much as of births, deaths and marriages. For all these things Mayr desires to use the term statistical or numerical method. For the statistical method applied to the phenomena of human society, he desires to use the term statistical science. Statistical science is therefore a branch of social science distinguished by its method. His definition is: "The systematic knowledge of human society, (of the phenomena of the same and the laws derived

from these), gained by the quantitative observation of numerous instances." ("Die systematische Darlegung und Erörterung der thatsächlichen Vorgänge und der aus diesen sich ergebenden Gesetze des gesellschaftlichen menschlichen Lebens auf Grundlage quantitativer Massenbeobachtungen").

The question at once arises:—Why should we use the term science when the numerical method is applied to the social sciences, and only method, when applied to the phenomena of natural science? Mayr's answer to this is, that in the natural sciences the statistical method plays only a subordinate part. The favorite method there is the experimental, and when once a law has been established we need no further observations. When we have discovered that water freezes at a certain temperature, we are sure that water will always freeze at that temperature. In botany, the observer comes across a single perfect specimen of a plant. He analyzes it, the number and arrangement of petals, sepals, the form of the leaf, etc., and he is done. Every subsequent flower of that kind will show those characteristics. He does not need the statistical enumeration unless he is describing the flora of a country, in which case he notes every time he comes across that particular plant in a different locality. The statistical method in the natural sciences plays an altogether subordinate part. On the other hand, take a fact in social science.—the average duration of human life. The observation of a single instance gives us absolutely no information. We must observe the duration of life of thousands of individuals, and then get the average. For social science, the statistical method is so important that it deserves the rank of a science.

To this conclusion the statisticians of the continent have been driven by practical experience. Statistics were collected at first simply for administrative purposes. They were afterwards used by the professors for the purpose of illustrating their lectures on political economy. These professors soon found it necessary to give a few lectures on statistical method, for the facts were so important that the validity of the method became very important. It was inconvenient, however, to separate the different parts of statistical inquiry; for how could one understand economic statistics without knowing something of the population, or statistics of vice and crime without investigating the economic and social condition of the people? Thus in German universities we first began to have lectures on statistics, given generally by the professors of political economy, afterwards and at the present time by heads of statistical bureaux or by special professors of statistics.

It is not possible, within the limits of this brief monograph, to discuss the merit of these opposing views. Among the continentals there are all shades of opinion. Some call the statistical method simply an application of inductive logic: and the latest German writer on political economy (Gustav Cohn), has again denied to statistics the rank of a science. It is awkward to use the term statistics in the singular as denoting a science; but still we do use the terms mathematics, economics, and politics. To "statistical science" there seems to be no more objection than to "political science." Aside from this merely verbal difficulty there seems to me no real objection to calling statistics a science. The

advantage of doing so is that it rescues the study from the barrenness which results from viewing its object as simply the collection of masses of figures with which the statistician has nothing further to do. The habit, prevalent in England and America, of printing page after page of figures without note or comment, has resulted in a popular dislike, almost amounting to horror, of this most useful method of investigation in social science. We need to know for what purpose the observations were made and what they show. The continental view attains this end most successfully.

In view of this practical need it is, in my opinion, expedient to recognize statistics as a branch of social science employing a specific method, and devoting itself to those problems of life in society which can best be solved by that method. It is useless to try to separate the statistician and the sociologist, saying that the former shall supply the material and the latter work it up into a science. The separation may be made in formal thought, but it cannot be carried out in practice. The statistician must be enough of a sociologist to understand the nature of the problem his statistics are to solve, or he will misdirect his efforts. The sociologist must be enough of a statistician to understand the method and the value of the results, or he will misinterpret the material, and formulate laws which have no existence. It is impossible to sever the two without destroying the efficiency of both. The business of the statistician is not merely to furnish material, but also to draw from his observations what those observations really mean, and the social laws that are established by them. He also is best fitted to formulate the

problems which it is desirable to solve, and then to direct his energies to solving them. It is in this sense that it seems to me expedient to cultivate not only statistical method but also a statistical science.

IV.

THE FREEDOM OF THE WILL.¹

The tendency of every social science is to reduce the phenomena of human life to the position of actions controlled by law,—that is, to limit the province which in former times was allowed to the freedom of the human will. When statistics began to investigate such actions as marriage, vice, crime, etc., which up to that time had been supposed to be more or less capricious, it also invaded the domain of the freedom of the will. It happened too, that one of the most talented among the early investigators,—one indeed who has sometimes been called the father of modern statistics and whose personal influence, extending over nearly a century of human life, has been greater than that of any other single man in this study,—that Quetelet expressed the results of his investigations into crime in terms which seemed to imply that the criminal was the mere blind instrument of social forces over which he had no control. It is scarcely necessary to repeat those burning sentences in which he declared: "There was a budget which was paid with more regularity than that of

¹Knapp. *Neuere Ansichten über Moralstatistik.* Quetelet, *Physique sociale.* Mayr. *Die Gsetzmässigkeit, etc.* Venn. *Theory of Probabilities applied to Social Actions.*

any finance minister,—namely, the budget of the prison, the gallies and the scaffold.” Or: “Society encloses in itself all the crimes committed. It prepares them, as it were, and the criminal is only the instrument which executes them.” “Every social state presupposes a certain number and a certain kind of crimes as a necessary consequence of its organization.” Declarations like these seemed to remove all responsibility from the criminal. He was not accountable for the action, which was the consequence of the social organization. At the most he was simply an unfortunate, and if for the safety of society it was necessary to shut him up, he ought to be viewed with compassion, and over the door of his prison be written, “Hotel des Invalides.” This in case both the number of crimes and the persons who shall commit them are fixed. If only the number is fixed, and individuals are still left some choice, then the criminal performs a work of supererogation, and should be rewarded by society. (Knapp).

In the same way Buckle seized upon the new statistical investigations to declare that the freedom of the human will was a phenomenon which at the best interested the individual himself, but in respect to society at large did not possess the slightest importance. For society is governed by unchanging laws in comparison with which the acts of individuals appear only as the slightest disturbances, and in fact as disturbances which in the long run neutralize each other. The investigations of statistics seemed to supplement those of natural science, and to furnish the crowning stone of the edifice,—a universe governed by natural law.

It is needless to say that the crude fatalism once deduced from statistics has long since been discarded by the statisticians themselves. They are better aware than any others of the insufficiency of their data and the incompleteness of their methods for sustaining any such position as that. Statistics reveal regularities, but they also reveal irregularities the moment you extend the investigation to other countries, or cover longer periods of time. These irregularities may be due to the freedom of the human will for all that statistics reveal to the contrary. Even the regularities may be due simply to the fact, that, under similar circumstances, men would act in a similar way. They do not point to any fixed and unchanging law, but simply to similar causes. Statistics cannot decide the question of the freedom of the will one way or the other.

If however we admit freedom of the will, what becomes of statistics as a science? If men can perform certain actions or not perform them as they please, where can we get any laws of society, or formulate any social science which shall be anything more than antiquarian research? But in statistics we are not content with saying, that there have been so and so many suicides in England regularly during the last ten years: we draw from that observation the further prediction, that, unless something unusual occurs, there will be about the same number during the next year. Statistical laws are thus simply observed regularities, which, if the condition of society remains about the same, may be expected to continue in the future. It is true that these laws are simply empirical laws, which may be overturned at any time. But they have the same force as many of the laws

of natural science which are reached by induction. I cannot tell certainly that the sun will rise to-morrow, but I am very sure that it will. I cannot say that sixty out of every million of the inhabitants of England will commit suicide next year, but, unless I know that some great change has taken place in public opinion, or in the economic or social condition of the people, or in the activity of the police, I shall expect to find that rate in the statistics of suicide next year. In other words, we take it for granted in statistics, that, even if there is freedom of the will, men act from motives and under influences, and that, these influences remaining the same, the actions will remain the same. There is no such thing as freedom of the will, understanding thereby the caprice of the individual. All statistical laws are formulated under this condition,—the stage of civilization remaining the same.

It is for this reason that one of the most important things in collecting statistics is to see to it that all the cases observed are of a homogeneous class. A life table constructed for the upper classes of Great Britain will be of little value when applied to the inhabitants of interior Africa. An average wage does not become of more, but of less value, by including in it the wages of women and children as well as those of men. Statistics of accidental and violent deaths would not be improved by including those who have been judicially hanged. It is just at this point that the trained statistician can exercise his skill with the most effect; for there is no fallacy more common than that a great number of cases will somehow yield a result which will be valid, however defective the original data. It is often said that the irregu-

larities will disappear, leaving only the normal. If the data are genuine, this is true; but if the data are false, the result will be false. If I am insuring only healthy lives, then the observation of a large number of healthy lives will give me a more trustworthy expectation of life than the observation of a few; but the result will not be helped by introducing a number of diseased lives because I could not get enough healthy ones.

Statistical science, therefore, can claim for its laws and regularities only a certain degree of authority. But there is abundant room for its efforts even in modern societies, as will appear from the following considerations:—In the first place, society in its main features changes slowly, so that in statistics we are able to follow these changes and adapt our conclusions to them. For instance, it is possible that the removal of the fear of future punishment for the deeds done in this body which rationalism has brought about among certain classes of society, may have had some influence on crime. It is quite certain that if the notion of hell were altogether removed from the consciousness of the lower classes, it would have some such effect. But it takes a long time to remove such a belief from the minds of a whole community, together with the influence it has had on their actions, and during that period statistics would have time to adjust themselves to the changed condition of things, or the old religious motives would have been replaced by other ethical ones having the same influence.

Again, the history of statistics shows that there are probably many more actions of men governed by general influences, such as climate, race, economic

condition, than we have any conception of at the present time. The great herd of common men have no very vigorous individuality, which would lead them to reach out beyond the influences immediately surrounding them. Once in a while we come across an individual who seems to fight his way out against all impediments, and to assert himself in spite of influences all tending the other way. But such an one is an exception. Is it not probable, that, for the mass of men, general influences have much greater power than is commonly supposed, rather than less? It will only be when we have refined our statistics so as to more clearly separate the causes, that we shall be able to answer this question, upon which the future of social science so largely depends.

In truth, one of the most useful functions of statistics is connected with this very fact,—that the results change with changing circumstances. Statistics observe not only regularities, but also irregularities. We study suicides with the aim, not only of discovering that they are regular, but that they are irregular, and the cause of the irregularity. The object is to direct social action towards changing the conditions, so that the evil which afflicts the social body shall be mitigated. It is precisely this which the temperance advocate does, when he shows the connection between intemperance and crime. He preaches the doctrine that if you change the cause you change the effect. All statistics rest on this basis of necessitarianism,—that like effects will follow like causes, and unlike effects, unlike causes. All hope of ameliorating the condition of society depends upon this law, and the more closely we can identify cause and effect, the greater hope we shall

have of being able to adopt such measures as will result in social improvement. Even Quetelet saw this clearly, and expressed it in words which ought always to be quoted with the sentences noted above, but which seldom are. After speaking of society as containing a certain number of crimes in itself as a necessary consequence of its organization, Quetelet goes on to say:

"But this ought not to discourage us, but ought to lead us to change if possible the organization of society,—for if we change the causes we shall necessarily change the effects. All hope of ameliorating the condition of society depends on this law that like causes produce like effects."

So also Venn points out, that, in making predictions in statistics, all we have any right to do is to predicate simple futurity, not necessity. Because there has been a regular number of suicides in England in proportion to the population, we can say that in the future there *will* be so and so many; we cannot say that there *must* be. And even this futurity is conditioned by the circumstances remaining substantially the same. We are apt, too, to turn this simple futurity, which is the law of the mass, into a constraint upon the individual, and to feel that the very fact, that there will probably be so and so many suicides in England next year, drives individuals to commit suicide. But there is no justification of this view. It may be true that the elevated railroads in New York city carry 150 million passengers a year, that is, the inhabitants of New York travel on the road an average of 100 times a year each. But that fact exercises no constraint upon me; I may never travel on the road, or I may patron-

ize it every day. The law of the mass has in itself no power over the individual.

Finally, to show how completely this modified form of necessitarianism is accepted by statisticians, we may quote from an author who is representative of the extreme believers in natural law and evolution, Morselli, the author of the work on "Suicide." He sums up the results of his investigation as follows:

"Suicide is not an act depending on the personal spontaneity of man, but certainly neither less than nor unlike ordinary births or deaths, crime or mental disease,—a social fact. Laws universal and constant and (so far as we can judge, if the external conditions are not modified) necessary, restrain within the narrowest limits the path of action assigned to each individual, and show that the psychical activities are obedient to the same influences to which all other activities of living organisms are subject."

"Suicide is an effect of the struggle for existence, which works according to the law of evolution among civilized peoples."

We are not concerned here with this law of evolution. Morselli shows it to be the feeble, the weak-minded, the vicious, the passionate, that commit suicide. The question is whether we have any control over suicide so that we can decrease it. Or is it subject to natural laws over which we have no control? Morselli's answer is that we can influence it. The apparent and direct method would be to diminish the severity of the struggle for existence, so that these weak persons should not be pushed to the wall. But this does not seem to be practicable. Notwithstanding all the resources of modern civilization, the struggle and competition between individuals seems to be as severe as ever. Hence we must use the indirect method. If we cannot diminish the severity of the struggle we may strengthen the character of

the individual, so that defeat in the struggle will not be so disastrous. The cure is: "To develop in man the power of well-ordering sentiments and ideas by which to reach a certain aim in life: in short to give force and energy to the moral character." But this is to acknowledge the freedom of the will.

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The Stability of Prices,

— BY —

SIMON N. PATTEN, PH. D.,

PROFESSOR OF POLITICAL ECONOMY, WHARTON SCHOOL OF FINANCE
AND ECONOMY,
UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA.

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THE STABILITY OF PRICES.

SECTION I.

PHYSICAL CONDITIONS MAKING PRICES STABLE.

Among the economic phenomena of the present age, nothing has attracted more attention than the frequent changes to which the values of most commodities are subject. In the good old times in which the economists of the preceding generation lived, and from which they drew their economic illustrations and ideas, these changes seldom occurred, and when they did take place were very limited in extent, and came so slowly into effect as to attract no attention. All the common articles of consumption had fixed prices which often did not change for a lifetime, and if any dealer had attempted to charge more than custom demanded, it would have attracted the attention and aroused the indignation of the whole community. These conditions have been so altered that to-day a merchant must consult his paper each day before he can know where to purchase a stock at the best advantage. The consumer also must be on his guard or he will pay too much for his sugar or flour. Dress goods and clothing, even at retail, fluctuate so rapidly in value that a study of advertisements is essential to a careful purchaser.

If economists are asked to explain the cause of the sudden changes in value to which all commodities

are at present subject, the usual reply is that there has been an over-production. But why should we be more liable to over-production than our grandfathers were? Surely there must be a great change in our economic conditions to produce so great an effect, and if our economic conditions are based on natural laws during the present century, our relations to nature must have changed in some important respect to produce so great an effect on the stability of prices. Let us, therefore, seek to discover what natural conditions favor a stability of prices, and see if we can find a solution of this great problem in the modifications of our physical surroundings, which recent progress has occasioned.

That social state in which the Ricardian theory of rent is true, affords the best example of a stability of prices caused by natural conditions. Suppose there be three tracts or grades of land in use upon which the cost of producing wheat is fifty, sixty and seventy cents a bushel respectively, and that the gross produce of each tract is equal to one-third of the whole. If the price of wheat fell below seventy cents a bushel the third grade of land would go out of cultivation, and the amount of wheat produced would fall off one-third. So great a reduction in the quantity produced would cause a reaction in the price of wheat, and it would rise again to seventy cents or more. The price of wheat, however, could not rise much above seventy cents if, as Ricardo supposes, there is a fourth tract of land of a considerable extent upon which the cost of cultivation is a little greater than upon the poorest land in use. Under these conditions the price of wheat would be very stable, and would not vary much from seventy cents.

If, however, we change the conditions of our supposition, the result will be very different. Suppose upon nine-tenths of the land wheat was raised at a cost of production of but fifty cents a bushel, and that on the other tracts of land the cost of production increased gradually from fifty cents to ninety cents a bushel. Under these conditions there would be so small a change in the gross production of wheat, when its price rose, that we could not be certain that the small increase of wheat would counteract the social causes which raised its price. On the other hand, when the price of wheat began to fall, the probability is that the decrease of the supply of wheat would not be large enough to check the fall in price before it reached fifty cents a bushel. Fifty cents a bushel would be the limit below which the price of wheat could not remain for any considerable period of time, since nine-tenths of the wheat has this cost of production. How high the price of wheat might rise could not be determined from the physical conditions alone, and there would be no normal price from which the market price would fluctuate but little. Every change, whether social or physical, would have a great effect on the price of wheat, and as a result the market price would fluctuate rapidly and to a great extent.

If we compare these two widely differing suppositions, concerning the physical conditions determining the price of wheat, an important conclusion can be drawn as to the natural causes which make the price of produce stable. If the different grades of land used by an isolated nation can raise about the same amount of produce, then there will be a normal price of produce, and the market price will be very stable.

On the other hand, if a nation has so much of some one grade of land that almost the entire crop can be raised on the land of this grade, then there will be no normal price of produce, and the changes in price will be sudden and great. We can then have one nation in which natural causes will determine the price of produce and keep it stable, while in a neighboring nation, where most of the land has the same fertility, there will be no normal price of produce, and a great liability to rapid fluctuations in its value. The same nation, moreover, at one period in its history, can have many grades of land producing about equal produce, while at a subsequent time, through social causes, the produce of all the land may have about the same cost of production. During the first period we should expect to find the price of produce stable, while during the second period it would be a matter of surprise if there were no sudden changes of great extent.

Production of food does not furnish the only examples of the law which I am illustrating. Just as good examples can be obtained from other industries. In one social state all the producers of a given article of commerce may be so located that there is little or no difference in the efficiency of their labor, while in another social state the different producers may vary widely as to the efficiency of their labor. During the last century it seldom happened that many of the producers of any article were at the same place, or under the same social or physical conditions. The different centres of trade were small and without ready means of communication, the one with the other. The cost of transportation was great and commerce was in-

secure, while traveling was often perilous. These circumstances, combining with many others which might be mentioned, caused the different portions of each article of trade to have different costs of production, and as the scale of production was everywhere very limited, no one center of trade could produce enough to supply the market and displace their competitors, who produced at a greater cost of production. In our present social state all this is changed. A slight difference in the cost of production is now usually sufficient entirely to displace the producer who labors at a disadvantage, and the scale of production is so large that the most efficient centers can furnish more than the world needs of any article of trade. Commerce is so secure, and the cost of transportation has been so reduced, that most producers on a large scale can compete with success on any of the world's markets. When these two social states are compared it must be readily perceived that our ancestors were surrounded by natural and social conditions which kept prices stable, while we have lost most of these conditions by agricultural improvements, and by those changes which have brought about a more equal efficiency of labor among producers. In former times the great difference in the efficiency of labor among producers caused the order in which the different producers would cease to compete as the price of any commodity fell, to be nearly as certain as was the order in which the land went out of cultivation when the price of produce fell. Hard times seriously affected only those whose efficiency was the least, while the other producers were protected from heavy losses by the reaction in

prices which was sure to take place when a few producers ceased to compete. In such a social state the suffering of the few protected the many, and the nation could prosper without governmental interference. With us, however, when all the producers have an equal efficiency of labor, there is no one portion of the producers on whom the results of falling prices first come. Every producer is affected at the same time, and in a like degree, and each one suffers as much as did the least efficient portion of the producers of the last century, and no one has that protection which in former times natural conditions afforded to the greater part of the producers.

I do not wish to infer that at the present time natural conditions afford us no protection. I only desire to point out the real conditions of stable prices, and to show why the natural conditions of stable prices decrease as the relative quantity of good land increases. If the reader clearly perceives the two extreme possibilities he can more correctly judge what are present actual conditions. Picture on the one hand a nation where, all the land being of equal fertility, no land will go out of cultivation as the price of food rises or falls. On the other hand, picture a nation where the land has many different grades of fertility, no one grade being of a much greater extent than the others. Let the social conditions of the first nation be such as to favor a production on a large scale, and to give an equal efficiency of labor to each producer, while in the second nation the scale of production is small, and the different producers vary widely in the efficiency of their labor. Under these conditions the second nation

would have very stable prices, and each article of commerce would have a normal value from which the market value would differ but little. The industrial condition, however, of the first nation would be widely different from that of the second nation. There would be no natural order in which the different tracts of land would go out of cultivation as the price of food fell, nor would natural conditions determine which of the different producers would first cease to produce as the value of their products was reduced. Every changing circumstance, however unimportant, would have effect on prices. A slight deficiency or excess in the price of any commodity, a change in the weather affecting crops, the actions of Congress, a railroad war, a bank failure, or any of a multitude of like circumstances, might set a series of causes at work that would so disturb all commercial circumstances as to throw the whole nation into distress.

Nor is this the only difference between the two nations. When wages and profits are fixed by natural circumstances, and prices are stable through the presence of a large quantity of land at the margin of cultivation, we can know that the surplus revenue above the amount of profits and wages goes as rent to the landlords. It is certain who will get each portion of what is produced, even if the natural distribution does not correspond to our ethical ideas. This certainty as to the distribution of wealth disappears when all producers have an equal efficiency of labor and there is no land at the margin of cultivation. Suppose that in a section, distant from the seaboard, the cost of production for wheat was fifty cents a bushel, the cost of transportation ten cents and the

market price was seventy cents a bushel. The railroad company could raise the rates of transportation from ten cents, its real cost, to twenty cents, and thus divert the ten cents a bushel from the pockets of the farmers to the treasury of the company. Nor would the farmers have any natural protection if the cost of production did not exceed fifty cents a bushel. If the railroad company did not do this, or did it but partially, any other combination of capital could do it. Through a combination the price of nails, cloth or coal could be raised, and the farming classes would not be protected by natural causes until the whole of the surplus—ten cents a bushel—was absorbed by those acting in these combinations.

The owners of good land have, by themselves, no natural protection. Their only protection consists in the presence of a large tract of land at the margin of cultivation, which would go out of cultivation if the price of food was reduced. When, however, there is no land at the margin of cultivation, or only so small a tract that it cannot cause a reaction in the price of food if it is not cultivated, then land owners have no means of protection, and it is more probable that the surplus revenue should find its way into the treasury of some combination of capital than that the land owners should retain it.

The Ricardian theory of rent has two sides. The strong side is presented when it is asserted that the best land will be first cultivated, and that the poorer lands will be brought into use only as the price of food rises. We see the weak side, however, when it is asserted that the order in which land goes out of cultivation as the price of food falls, is exactly the reverse of the order in which it came into cultiva-

tion. If one tract of land can be brought into cultivation when the price of wheat is fifty cents a bushel, while the natural conditions of another tract require a price of fifty-five cents a bushel before it can be brought into cultivation, it accords with common experience that the first tract will be cultivated before the second. There is no such experience, however, to prove that the tract whose natural conditions demand that the price of wheat be fifty-five cents a bushel before it can be brought into cultivation, will be thrown out of cultivation if the price of wheat should fall again to fifty cents a bushel. Before we can determine what will be the price at which this land will go out of cultivation, we must consider all the social causes which begin to operate as soon as the land is once cultivated. The greater part of the newly cultivated land is esteemed poor land, not from any lack of fertility, but because its situation is distant from the large centers of production and population. A few generations, however, are usually sufficient to establish new centers of industry in the newly cultivated regions, and then these lands, through a better distribution of population, become as valuable as those of the older settled regions. Many tracts of land are esteemed poor when first cultivated, because of the great obstacles to cultivation, which can be removed only by the use of capital. Ditches must be dug, stones and timber must be removed, and often the soil is so deficient in some respect that it can become valuable only through artificial fertilization. When these expenditures are once made improved lands are as productive as those having a natural fertility, and they can be cultivated with profit, even if the price of food is

reduced. Of equally great importance in reducing the quantity of poor land are those changes in the demand for food which allow each tract of land to be used for those crops for which it is best fitted. When the diet of a nation is composed chiefly of bread, meat, potatoes, rice, or any other one or few articles of food, all the land of this nation must be used for the production of the few crops which are in demand. Large tracts of land will not have the soil or climate suited to these crops, and they will have little or no value until some change in the demand for food creates a desire for those articles for which they are fitted. Such changes often occur, either through the desire of the people for a more varied diet, or from the introduction of some new crop fitted for animal food. Even mere mechanical inventions have often changed our estimate of large tracts of land, causing what was formerly regarded as poor land to become good land. The invention of the cotton gin made the cultivation of cotton profitable on the upland regions of the Southern States, and thus changed large tracts of poor land into good land. A still more important change has been made by the introduction of railroads and of improved farm machinery into the great corn regions of Illinois and the neighboring states. Previous to these events wheat was the main crop, and for it the land was so poorly fitted that not half of the land could be cultivated, and even on this half the crop was often a failure. Now the cultivation of wheat has almost ceased. It is an article of import and not of export, as was formerly the case. At the present time, with corn as the leading crop, those tracts of land which were cultivated when wheat was the

main crop, are usually less valuable than are the lands which could not be cultivated so long as there was a demand for wheat only. These social causes so radically change our estimate of cultivated land that its cultivation would continue even if a large permanent reduction in the price of food should be made.

The foregoing facts clearly show the weak side of the Ricardian theory of rent, and unfortunately for the theory, it is from the weak side, and not from the strong side, that most of those conclusions are drawn which have made the theory so famous. When Ricardo seeks to show that a tax on corn will not reduce rent but will raise the price of corn, he does not prove his case by showing the order in which land will come into cultivation as the price of corn rises. He seeks to prove his case by asserting that there is a tract of land at the margin of cultivation, which will go out of cultivation if the price of corn does not rise enough to compensate for the tax. He thus appeals to the weak side of his theory, as do most of the arguments based on his theory of rent. In his writings, and those of his followers, we continually read of land being thrown out of cultivation, but we seldom read of the order in which land comes into cultivation, except in those chapters where they seek to prove the theory. There they prove the one side of the theory, and in the following chapters draw their conclusions from the other side. These conclusions are, therefore, true only of the earlier stages of social development, when there are yet large tracts of poor land at the margin of cultivation. So long as this is the case land owners, aided by nature, are stronger than any combinations of capital

can be, and they may look with ease while the other capitalists and laborers struggle for the mastery. As soon, however, as the results of progress change these poor tracts into good ones, the land-owners are much weaker than they were in the earlier stages of progress, when they were aided by the presence of large tracts of poor land. When these tracts of poor land disappear prices are no longer stable. It is now largely a question of power which of the contending classes shall possess that surplus revenue which a large margin of fluctuation in prices leaves without natural conditions to determine in what manner it shall be distributed.

SECTION II.

No-RENT LANDS.

A correct appreciation of the importance of no-rent lands cannot be over estimated. So many related theorems are determined by the solution of this problem that it is necessary to investigate it carefully from every possible point of view. It has been urged to support the existence of no-rent lands that though large permanent improvements may remove certain tracts of land so far from the margin of cultivation, that even an extensive fall in the price of food cannot throw them out of cultivation, yet there are other tracts not capable of improvement which would go out of cultivation, and thus the Ricardian principle would hold true that with each increase of the price of food, the margin of cultivation would be advanced, while with each fall in price it would recede. With an increasing demand for food, a swamp would be

drained or a plain irrigated, and with a fall in price some barren hill-side or half arid stretch would be abandoned.

I cannot admit that the latter result would follow in any case in actual life. It would be true only in a hypothetical case, such as Ricardo is fond of using, but which has never been realized in any civilized state. It is also highly improbable that any early stage of human development would afford conditions suited to realize it. If, as Ricardo is fond of supposing, all the land was used for one crop, say wheat, then land might be thrown out of cultivation when the price of food falls. There are many soils poorly adapted to the growth of wheat, and only a high price of this article will enable wheat to be cultivated on them at a profit. Some such lands would cease to be cultivated for wheat if its prices fell, but that affords no ground for the opinion that in the actual conditions of civilized life they could be put to no use for which they would yield a rent to their owner. It is essential to a clear perception of the no-rent problem that the conception of land as fitted for one crop only, should be discarded. This is hard for any one to do who has been educated in the Ricardian economics. A clearly perceived, though false hypothesis like Ricardo's, biases the mind and prevents the perception of other more complicated hypotheses that conform more closely to natural conditions by which we are actually surrounded. The cultivation of new and richer lands caused by the draining of some swamp, would doubtless cause the owner of a hill-side to change the crops for which he had formerly used it, but I see no reason why he should abandon it as a Ricardian would assert. Hill-

sides are fitted for crops for which the fertile plains are not adapted. Potatoes, for example, are more productive and of a better quality when raised on a hill-side than on the richest plain. The owners of the most fertile plains of Illinois find it profitable to get their potatoes from Wisconsin hills. Eastern cities get most of their potatoes not from fertile plains, but from some of the most hilly and rocky regions in their vicinity. In many parts of the west, hills sloping to the north are best adapted for fruit and trees, and are highly esteemed on that account. Grapes also grow best on hill sides. The banks of the Rhine are so steep as to be useless for ordinary cultivation, yet they have a higher value than the adjacent fertile plains, because of their adaptability to the culture of the grape. Sandy half arid stretches have also crops for which they are especially fitted. The increase in market gardening in New Jersey has converted many sections formerly so barren that only a few stunted trees would grow on them, into the best of land. As an example of a marvelous change, consider the growth and development in the neighborhood of Vineland. Large sections of Hanover were formerly so barren that at first only buckwheat could be grown, yet from this small beginning they have been converted by their industrious owners into fertile lands. The conversion of poor land into good land is merely a question of a demand for some crop for which it is fitted. With this beginning, time and industry will develope those qualities in the soil which will make it suitable for all the crops growing in that region.

These are not exceptional cases. They are only samples of a large class which may be seen in every

land by any one who will study the actual world in which we live and not theorize about that hypothetical one which the Ricardians have invented. Even if the hill-sides are no longer cultivated it does not follow that they can be put to no use through which they will yield rent. They can be used for meadow or pasture, and in this way will give their owners a return much greater than their cost. Barren hill sides often produce the best forests and thus bring in a large revenue to their owners after the original forests of the country have once been exploited. On the continent of Europe may be seen many half arid stretches covered with forests and yielding large rents.

We must view the world not as suited for one crop alone, but as used for a great variety of crops, each section having some crop for which it is especially adapted. In addition to this each tract can be put to many uses, being more or less fitted to several crops. Suppose a given tract will yield five dollars an acre as rent from corn, four from wheat and three for rye. If some new land especially adapted to corn, was cultivated and the price of corn should fall, this land would not be abandoned, but would be used for raising wheat, and still return a large rent. Should the price of wheat fall through the cultivation of land better suited to wheat, rye would be cultivated, and still a fair rent would be secured. In this way it might be put to twenty different uses and yet never become no-rent land. It is also worthy of notice that poor land, even though it be a hill side, remains in this condition only through defective tillage. From all land certain qualities are taken by cultivation, and all land will soon become poor if these qualities

are not returned. The return of these qualities alone keeps the land rich, and no farmer would think of putting all his manure on his fertile valleys while he let the hill sides become barren. On the contrary, he would place most of it on the poor fields and thus in time equalize the fertility of his farm.

When we recollect how often mere sand hills have been changed into the most productive land, it will be seen that there is no reason why lands capable of tillage should go out of cultivation merely because of a fall in price of wheat after they have once been cultivated long enough to make them productive. It is wrong to think that land of the first quality can be added to those now cultivated, only by the draining of swamps or by irrigating canals. The sandy plains of Belgium and Germany have been converted, by scientific tillage, into as good land as has been obtained by draining the swamps of Holland or the bogs of Ireland. Their qualities are as permanent as those of the latter, nor would they go out of cultivation any earlier if the price of food should fall. Any land capable of tillage in which there exist no qualities destructive of vegetable life, can be made into good land if time be given and skill and care be used. If land remains poor land it is not from natural causes but from social conditions. Nature always tends to make land better; it is man alone that keeps or makes land poor. If man can find no use for hill sides, or half arid stretches, it is through some fault of his own. Upon such tracts can be cultivated many plants for which the plains are not fitted, and only where man is so ignorant as to desire but few articles of food will the demand for articles grown on the hill sides be so small that they

cannot be cultivated with profit. Hill-sides, however, can not be made into plains nor plains into hill-sides, and if man persists in consuming only the products of one locality, he must not blame nature that the rest of the world is of no use to him. We all can see how stupid were the old Egyptians when, after migrating from a mountainous region to the banks of the Nile, they persisted in erecting artificial mountains in which to bury their dead. Yet the waste of labor in this way is not greater than that of other nations, who, after a change in their natural conditions, persist in their old habits of eating and drinking, and endeavor, fruitlessly, to change hill sides into plains or the opposite, rather than to adapt themselves to their new conditions. Just as it was social and not natural causes that induced the Egyptians to erect the pyramids, so are those causes social and not natural which compel farmers on hill sides to compete directly with those of the plains. Nature will not change her laws to suit our notions, and if we persistently continue to demand articles of food for which our land is not well fitted, we should not endeavor to throw the responsibility upon nature by asserting that the presence of large tracts of poor land is the result of natural laws.

It is true that economics must take man as we find him. Yet it is necessary to analyze a given effect to see whether the cause lies in man, in nature, or in his social environment. If the greatest happiness of the individual comes from having a small part of a rare article the cause of misery does not lie in nature. Neither can this view of happiness be shown to be the effect of any physiological law. It must, therefore, arise from the complicated workings

of those social causes which obscure so many of the natural laws. Social laws may be as difficult to counteract as the natural ones. This fact, however, gives us no excuse for confusing the one class with the other.

It is important that the difference between rent produced by natural causes should be distinguished from rent resulting from social conditions. That there are, and always will be, some differences in soils, cannot be doubted. If the only rent which farmers had to pay was for differences in soil, the Ricardian formula would hold true, and there would be no-rent land. Rent produced by social causes, however, does not arise from any difference between advantages of one place over another, but from those social conditions which increase the competition for land in general; and when rent arises from these causes, there need be no no-rent lands. If the general social development of a country favors a low rate of wages and interest, and a diet limited to a few articles, the demand for land becomes so great that a large rent will be obtained from all land suitable for the cultivation of those crops which the people desire. It is, of course, possible, and in some stages of development probable, that there will be land paying no rent, but where rent is the result of social conditions, there is no connection between high rent and no-rent lands as is the case where difference in fertility is the sole cause of rent. Differences of situation are to be classed along with the social causes of rent. If there were no division of labor, and every thing were consumed on the spot where it was produced, there would be no advantages of situation. The concentration of labor at given points gives

greater advantage to adjacent tracts of land than to those more remote, but the advantages of the division of labor soon become so great that even the more remote tracts give to their owners a large income above the cost of labor and transportation, and thus all land becomes rent-paying land. In one respect rent derived from situation resembles that derived from differences of soil. It is like the latter distributed unequally among the landlords, those nearest to the markets getting the greater portion. It is, however, the distribution of a real gain to society—that gain resulting from the concentration of industries in few places—and when these gains become so large as greatly to exceed the cost of transportation to remote places all land becomes rent-paying land. The advantage of situation has no relation to any qualities of the soil. It arises solely from concentrated industry, and has no differences as a basis which would necessitate some land to remain at a margin of cultivation with only that return which would merely compensate the labor and capital employed upon it.

When all these social causes (low wages and interest, limited diet and concentrated labor) combine, the price of food is forced so high that all tillable lands yield a large rent to their owners. Even the poorest land has many uses from which much more can be obtained than the cost of the labor and capital expended. Capital, however, must be understood in the limited sense of the return for that portion of capital which must be annually replaced. If all capital expended in bringing land into cultivation were always considered as capital a large portion of the earth would never yield any surplus as rent. This

portion of capital follows the same laws as rent and should be considered as rent. As it is sunk in the land it becomes absorbed in it and cannot be withdrawn because the price of food falls; nor can it cause land to go out of cultivation if no return for it is received.

It is perhaps best to restate the view of rent which has been advanced and show the suppositions on which it rests, and the relation in which it stands to those more commonly accepted. The causes that raise rent are independent of those that raise wages and operate more quickly. The increase of rent depends upon those causes that increase the productiveness of industry. Every invention, every additional division of labor and every utilization of any new natural advantage increases that fund which is likely to be absorbed by rent. The increase of wages on the other hand depends on very different causes. It is determined by those laws which fix the standard of life in each nation. Before the laborers can share to any extent in the increased productiveness of industry they must be educated and their standard of life raised. This is at best a long, slow process, so slow that it takes centuries to accomplish results that could be brought about in production in as many decades. If rent depended upon the efficiency of production while wages depended upon education and improved consumption, the increase of rent would be fixed by the degree in which the increased efficiency of production outran the improvement in education and consumption.

The increase of rents is greatly assisted by the fact that the rapidity of the increase of efficiency of industry is determined by the progress of a few

centers of civilization while the increase of food and wages can be secured only as civilization permeates every quarter of the globe. English cities, for example, could produce enough commodities for the whole world, and with a rapidly increasing efficiency: yet the increase of land and the rise of wages cannot proceed rapidly while so many parts of the world develope but slowly if at all.

From the beginning of modern civilization the efficiency of production has increased much more rapidly than the improvement of the laboring classes and it is likely so to continue for many ages. As a result the fund to be distributed as rent absorbs the larger part of the gains of improved processes, and this fund will increase so long as the efficiency of production develops more rapidly than the standard of life among the laborers. Rent can be so high as to leave no no-rent lands so long as the present more rapid development of industrial processes continues. These causes raise the value of the produce of what would otherwise be no-rent land and make it yield a large rent and to a like degree increase the rent of the better land.

It is universally recognized that any commodity may have its value increased above its normal value. An unforeseen enlargement in the demand for cloth or iron makes its price rise above the normal cost almost every year. Ships, factories and other articles of production which take a long time to complete depart from their normal value for a much longer period than do commodities like iron and cloth. It is the same principle which in the case of land operates to raise the rent of all lands and to prevent any tract from remaining no-rent land. The dif-

ference is that the period through which the price remains above the normal value is greatly extended. Instead of for months, as in the case of cloth, or for years, as with buildings or ships, the rent of land remains for centuries above what the normal rent would be, if we measure normal rent by the differences of soil. In fact rent can almost be said to be raised permanently above its normal value so stable are the causes which make it increase more rapidly than wages. Only in the earlier stages of civilization have real rents corresponded to normal rents and it seems likely that in the final stages of progress they will again be the same, if we can hope for a final solution of our social problems which will make the real reward of each laborer the same as the average return for all labor. Until then, however, we are likely to have abnormal rents so high that no land will long remain at the margin of cultivation.

SECTION III.

THE MARGIN OF CULTIVATION.

The relation between no-rent lands and the margin of cultivation is so intimate that a discussion of the former would not be complete without a consideration of the latter and of the laws which depend upon it. According to the Ricardian system the land at the margin of cultivation measures the rent of all better land and at the same time determines the rate of profits. In estimating the truth of any Ricardian law we must always consider the hypothesis upon which it is based. Ricardo always supposes that wheat is the staff of life to the laborers and that all

land is used for its production. If these simple conditions were true, the laborers having but one kind of food for the production of which all land must be used, the deductions based upon the margin of cultivation would doubtless be beyond dispute. These conditions, however, never were wholly true and the continuous progress of many ages has developed so many different uses for land and so many kinds of food that so simple a criterion of rent and profits has but little value. Bread is no longer the staff of life in any real sense. Wheat growing has a very subordinate place in comparison with the aggregate of the food supply which is now produced and consumed. Yet in one way it has a place different from any other article of food. It is usually the first use to which land is put after it is brought into cultivation. This is because wheat is so much less perishable and has a much smaller cost of transportation than other agricultural produce. Around the industrial center of any nation we might draw a series of circles representing the different areas in which the various crops could be cultivated. In the section nearest the center the bulky perishable crops would be found while at the margin wheat would be grown. As the demand for food increased the area used for each crop would be enlarged, and as the crops at the center occupy more land the wheat, at the margin, would be forced upon new land still farther from the center. There is thus with the increase of population a series of changes in the use of land, from articles like wheat for which labor is least efficient to others like corn, root crops, and garden products for which labor is more efficient.

Suppose the best land when used for wheat produced thirty bushels an acre and that on the land

now used for wheat only twenty bushels could be raised. According to the Ricardian formula the rent of the best land would be ten bushels an acre. This would be correct if wheat was still cultivated on the best land. This land, however, is no longer used for wheat but for other crops for which it is more productive. The benefit of the increased productivity of the best land could not come entirely to the laborers upon the best land without giving them a higher reward than those received at the margin of cultivation where worse land is now in use. The rent of the best land must therefore rise above the value of ten bushels of wheat, the true rent if wheat were cultivated upon it.

For this reason the Ricardian law fails to measure the rent of land correctly. Good land must have a rent at least as great as the difference in its fertility for wheat from that of the land at the margin of cultivation. As soon as some other crop is produced on the land a still larger rent must be given and the rent can be as much larger as the labor employed upon it is increased in efficiency by the change of crops. Rents increase more rapidly than the margin of cultivation is lowered, and a knowledge of how much more productive for a given crop a certain field may be than is the land at the margin of cultivation affords no criterion by which its rent can be measured.

The same change in the demand for food destroys the relation between the margin of cultivation and the rate of profits. Ricardo sought to show that the rate of profits was high when all the cultivated land was very fertile, and that it was reduced as the margin of cultivation was lowered through the use

of poorer land. If the food supply consisted entirely of wheat or of any other one crop, the rate of profits would be reduced as land less productive for this crop was brought into use. When, however, a second crop displaces wheat on part of the land the same conclusion cannot be drawn. There is an increased productivity on the land where the second crop is raised to counteract the reduced fertility of the new land used for wheat.

The land of Northern Illinois was at first used for wheat. Being, however, much more productive for corn it was soon used only for the latter crop, while wheat was produced further west in Minnesota. Even if the land of Minnesota was less productive of wheat than that of Illinois, the inference could not be drawn that the general rate of profits is lowered. To lower the rate of profits the average cost of the whole food supply must be raised, and if the increased productivity of the land of Illinois for corn was as great as the increased cost of wheat in Minnesota the rate of profits would not be lowered in spite of the fact that the margin of cultivation was reduced. To allow the cultivation of wheat in Minnesota a higher price for wheat was needed but the gain from an extensive use of corn in Illinois makes the average return for agricultural labor no less than before and thus prevents a fall of profits.

With each extension of cultivation a similar change takes place. Land near the centers of commerce is put to new and more varied uses which increase the efficiency of labor employed upon it, while the cultivation of wheat is driven into more remote regions where the cost of cultivation is increased. This change necessitates a rise in the price

of wheat, but no inference can be drawn as to the change in the rate of profits because it depends not upon the price of wheat alone as Ricardo assumes, but on the average cost of all agricultural produce.

It is not the reduction of the rate of profits that allows the cultivation of poorer land for wheat. The lowering of the margin of cultivation comes from a more efficient use of the better land so that its tillers can pay more for wheat. Illinois farmers ceased to raise wheat and began to procure it from Minnesota not because their rate of profits was reduced, but because by producing corn their labor became so much more efficient that they could afford to purchase it, even at an increased cost. From the actions of farmers we can determine whether or not a reduction of the margin of cultivation for wheat arises from a fall of profits. When the farmers on the better land continue to raise wheat it shows that the rate of profits is lowered. If, however, they cease to raise wheat and procure their flour from the newer lands in exchange for their produce, it shows that they have found better uses for their land from which the gain is sufficient to allow them to pay a higher price for flour. A mere lowering of the rate of profits would not change the use of an acre of land. When a change is made in the crops there must have been a change in the relative cost of different crops. A better use for a farm must be found before it will cease to be used for a given article of food, which must in the future be obtained in exchange for the new crops.

From these facts it is evident that land at the margin of cultivation does not measure rent or determine profits when agricultural produce is composed

of a great variety of articles. Only when wheat or some other single article of food is consumed, do profits fall as the margin of cultivation is lowered. We must therefore resort to some other method to determine profits under the complicated conditions which exist in our present civilization. What the correct method is I shall endeavor to show in the following section.

SECTION IV.

THE GENERAL LAW OF DISTRIBUTION.

Of the factors necessary for production, that factor which tends to increase at the slowest rate, will reduce the shares of the other factors to their lowest possible limits, will have the benefit of all improvements and must bear all permanent burdens.

At the beginning of this section has been placed a law of distribution of great importance for a clear conception of the many intricate problems which arise out of the distribution of wealth. It is not given as a substitute for other laws explaining the same phenomena, nor with the expectation that by this means the whole topic may receive a ready exposition. Yet a new point of view often furnishes a clearer perception and a readier explanation of some complicated phenomena than can be obtained by any manipulation of old formulas. Those deductive principles of which so much use has been made in this department have advanced our knowledge in a remarkable degree along certain lines, yet they

cannot be said to have made the whole field as luminous as should be desired. Perhaps other principles, obtained from a different standpoint, will be able to throw light into some of the yet obscure corners and when they are brought into proper relation to prevalent doctrines it will become clear that they are complementary to those already known.

Wages and interest have usually been regarded as standing in direct opposition the one to the other. Whatever raises the one involves the fall of the other and between them they absorb the whole return for labor after rent has been deducted. I desire to have them viewed not as directly connected or as opposed to one another but in their relation to land and the causes which increase the supply of land, labor and capital. Each of these factors has its own rate of increase, and the causes which operate to increase any one factor are to a very large degree at least independent of those which tend to increase the other factors. From this point of view, to determine the share of a given factor, we must know its rate of increase and compare this rate with that of the other factors. The more rapidly increasing factors will find their shares of the whole produce reduced, while the share of the slowest increasing factor will be augmented by what the others lose. There is, therefore, no opposition in interest between the more rapidly increasing factors. Their interests are in harmony as against the more slowly increasing factor to which flows an ever increasing proportion of the whole return from industry. In any given state of industrial development and of civilization there is a certain fixed relation between the amount of land, capital and labor of which use can be made.

If more labor is to be employed, more land and capital must be utilized, and with the use of additional land or capital the proper addition must be made to the other factors.

The real increase of these factors must stand in a definite relation to one another, and if any factor tends to increase more rapidly than another there is no way by which this tendency can be sufficiently counteracted but by a reduction in the share of the produce to which it is entitled. The greater the difference between the tendencies of the two factors to increase the more must the share of the too rapidly increasing factor be reduced before the increase of the two factors will stand in proper relation to one another.

The truth of this point of view is doubtless most obscure in the relation of land to labor and to this, therefore. I shall devote especial attention. In every community population has a tendency to increase while the supply of food is limited. There is no effective way to check this too rapid increase of population except through a rise in the price of food. When the price of food rises the difficulties of supporting a family are increased while the means of obtaining support remain as they were. This change will induce many to rear smaller families and modify in other respects their habits and customs, or if the standard of life is low the death rate will be increased. If the growth of population is not checked at once so as to be brought into a proper relation to the food supply, another and another rise in the price of food will take place until the too rapid increase is brought under control. Were the supply of food absolutely limited there could be no increase of population and

the price of food must rise until the father and mother of each family could procure only enough food to support themselves and rear a couple of children to take their places when they died. The amount necessary to do this would vary in different nations, depending on the degree of their civilization and on the national industries. Some fixed amount there would be and this would be their standard of life. Under such conditions the price of food would be high where the standard of life was low and each would vary inversely as the other. Such conditions seldom or never arise in actual life since the land factor is constantly increasing though much more slowly than population. As a result the checks to population do not have to be applied so sternly to produce an equilibrium between the rates of increase of land and population, as would be the case if the supply of land was incapable of increase.

Although the possibility of enlarging the food supply reduces the pressure of population on the means of subsistence, it does not remove this pressure. The same laws remain in operation, though their action is obscured by the more complicated circumstances in which they operate. We shall, therefore, gain in clearness of conception if we consider them as operating under simpler conditions than we actually find them working under. By this means alone can a correct idea be formed of the tendency of each element, and of the real connection of each factor with any of the others which join with it to produce the combined result. Especially is there great need of an investigation of the connection between improvements in production and the standard of life among laborers. In other words do improvements in production have a tendency to raise the standard of life?

Improvements in agriculture are of two kinds: either less labor will produce the same amount of food, or the same labor will produce a greater amount. If less labor will produce the same amount of gain it will not change the price of food, as the supply and demand will not be changed. Less agricultural labor will be needed, and the owners of land will gain all that is thus saved, and they would have enough additional means to employ the labor thus freed in some other way. Should the same labor produce a greater amount of food there will be a change in the relation of supply and demand, and the price of food would fall. The checks to the increase of population, which were produced by the high price of food, would now be partially removed, and population would increase more rapidly than before, until a return of the former price of food reduced the rate of increase to its old figures. The fall in the price of food would be temporary, and the advantage to laborers would be limited to that age in which the improvement was made. All the ultimate benefit would come to the owners of that slowly increasing factor of production which absorbs an ever increasing share of all produce.

If improvements be made in any other department of production than agriculture, the articles improved will permanently fall in price, and, for a time, the benefit of the reduction in price may come to the consumers of these commodities. It will now be easier to maintain the standard of life, which the community enjoys than it formerly was, and consequently some of the checks to the increase of population will be removed, and population will begin to increase more rapidly than before. The price of food must rise to

check this too rapid increase, and it will continue to rise until it is as difficult to maintain the standard of life as it was before the improvement was made. There is no way to keep down the price of food except by so limiting the population that it will be a more slowly increasing factor in production than land is. This adjustment of population to the means of subsistence could have been effected before the improvement, if the right measures had been employed, but people would not use them. If they could, but would not do this before the improvement, there is no reason to suppose that they will do it afterwards. At least there is no direct connection between the two, and the benefits of such improvements are likely to come to the landlords through the rise in the price of food, which is sure to follow. Doubtless there are times when improvements in production are accompanied by a change for the better in the standard of life. There are, however, so many instances in which even the opposite is true, that the unprejudiced observer must conclude that the more favorable outcome is a mere coincidence, and that the causes raising the standard of life are not the same as those which are so rapidly bringing into use so many improvements in production.

The effect of an extension of cultivation by the use of more land is similar to that of improvements in land already cultivated. If large quantities are suddenly brought into use, the increased demand for labor and capital would raise wages and interest. These factors would now increase more rapidly than before, and in time the price of grain would be restored and wages and interest would be reduced to their old rates. There would now be more laborers and more

capital employed, and the newly employed lands would return the same rent per acre to their owners as had the older lands.

From these considerations we can perceive what are the permanent effects of all improvements and extensions of cultivation, so long as the rate of increase of land is less than that of capital and population. Every improvement enables these two factors to increase in amount, but the share of the whole produce that each unit of labor and capital receives, remains as before. The landlords are benefitted by having more produce to enjoy, if the improvement is in land, or by receiving a greater price for their produce if the improvements are in other departments of industry. This must be the ultimate outcome if there is no direct connection between improvements and the standard of life enjoyed by the mass of the people.

It has commonly been held that the cause of low wages and over-population lay in the law of diminishing returns, and if this law was false, there could be no such thing as an over-population. It is true, that without the limitations of this law, capital and population could go on increasing forever, yet there is no reason to suppose their rate of increase would be the same. If these rates were different the same evils would arise which we now perceive in nations limited by their present conditions. Overlooking the effects of the law of diminishing returns, suppose that capital tended to double itself in thirty years, while population doubled its numbers in twenty years. Wages would of necessity fall, and the reduction of wages would continue so long as the increase of population was more rapid than that of capital, or until

wages had fallen so far that the share of product coming to the laborers would be barely enough to support themselves and their families. Under these considerations all the benefit of the fall in wages, as well as that of the gains from improvements, would come to capitalists through an increased rate of interest.

On the other hand, suppose that under these conditions this rate of increase was reversed, and that capital tended to double once in twenty years while population did the same only in thirty years. The rate of interest would now continually fall and wages would increase in the same proportion, and all the benefits of improvements would pass into the hands of the laborers as an increase of wages.

If through this general law of distribution the most slowly increasing factor of production secures to itself all the benefits of improved production, this same factor must also bear all the permanent burdens of society, such as taxes. By permanent burdens, however, must be understood only those which have remained in force for so long a time that all industrial undertakings have become adjusted to them in contrast to those burdens which are imposed for a short time to meet some temporary emergency. When permanent burdens are first laid upon society the more rapidly increasing factors might be compelled to bear them for a while, but in the end industry would adjust itself to the new conditions in a way that would transfer the burden to that factor which had the slowest rate of increase. The force of competition is always strong enough to reduce the shares of the two rapidly increasing factors to the lowest possible limits to which they can be reduced, and

below these limits they cannot long remain. The lowest possible limits to which the share of any factor can be reduced is reached when its rate of increase is no greater than that of the most slowly increasing factor. If its share were further reduced this factor would become itself the most slowly increasing factor, and then its share would tend to increase until its former share was restored to it. How far then the share of any factor can be reduced depends upon the difference between its rate of increase and that of the slowest-increasing factor, and the greater this difference the greater will be the reduction of its share before its rate of increase will stand in proper relation to that of the slowest increasing factor. This slowest increasing factor becomes, therefore, the determining factor in production. The shares of the other factors are fixed at the lowest limits of which the conditions of production and civilization will admit. All the surplus due to improvements augments the share of the slowest increasing factor, and permanent burdens are of interest only to those who enjoy a portion of that produce which comes into the possession of the slowest increasing factor through the greater competition to which the other factors are subjected.

The doctrine that the burden of taxation must be borne by the slowest increasing factor in production, must not be confused with the claim that all taxation ought to be placed directly upon land. While land is the slowest increasing factor taxes will reduce rent even if placed upon classes not owning land. Under our social conditions, however, we cannot be sure that land will bear all the burden of taxation. There are many monopolies besides that of land, and as

they share in the surplus due to improvements, they cannot avoid, at least, a part of the burden of taxation.

There are several important causes which prevent a clear conception of the working of those laws by which the burden of taxation is distributed, and to these some attention must be given before we leave the subject. In the first place there is so strong a feeling against all taxation as to make the whole topic viewed from the standpoint of feeling, rather than that of reason. Most economists have so much confidence in the maxim that the best of all taxes is that which is the least in amount as to make it suit their ends to strengthen this prejudice against taxation rather than to develop, scientifically, the laws of its distribution. This procedure is especially favored by the free trade movement, whose advocates find their strongest weapon against tariffs in the deep rooted prejudice, which all men have, that the interests of their particular class are those which are most injured by high taxes. It is not likely that broader views on taxation should come from this direction, and as most of our deductive laws have been developed by writers of free trade tendencies, it is easy to see why taxation should not have received that development which has been given to other related topics.

The same group of causes tend to give an undue prominence to taxes upon labor and a desire to exempt these taxes from the working of general laws. It is usually deemed expedient to excite the prejudice of the laborer against them by impressing upon him the idea that all taxes oppress him and his interests much more than those of other classes: and in

the same way the feelings of those who have a sympathy for labor and its wrongs are so much excited as to preclude a possibility of an impartial discussion from that standpoint from which alone the working of the general laws can be traced and separated from the many complications which obscure the view. Through our feelings the effects of subordinate laws and temporary circumstances are so magnified that they seem to be the controlling elements, and with the attention riveted upon the ebb and flow of the many particulars, the whole domain of taxation seems outside the realm of stable law. Only when the fantasies of fear, aroused through prejudice, no longer distort the vision, can the conception of regular law be developed in taxation similar to those laws which have already been so clearly demonstrated in other fields of economic investigation. The reign of law is no longer denied in regard to the rate of interest, rent, cost of production, etc., and these subjects are treated from so objective a standpoint that the slowly working but permanent causes can be separated from those which are temporary and shifting. The rapid and extreme variations of the market price, for example, do not prevent the economist from recognizing the deeper though less evident tendencies which govern the normal price of commodities, nor should any one allow his prejudices or sympathies so to bias his mind as to obscure the equally evident laws regulating the distribution of those permanent burdens which now absorb so large a part of the revenues of every well organized society.

Yet another cause leading to the obscurity of those laws which it is my purpose to emphasize, lies in

the optimistic hopes of many who have an interest in economics. They love to dwell upon the great progress which the last century has made in production, and then without further investigation accept as an axiom that all the benefits of this progress pass quickly into the possession of the laboring masses. Any emphasis of the fact that the standard of life depends upon slowly working causes, independent of the progress in production, is sure to arouse the opposition of such persons. It takes away the basis of that easy solution of our social difficulties which makes progress in production the only serious obstacle to the rapid development of mankind in all our social relations. We should all, doubtless, be pleased if the laborers were the residual legatees of all the proceeds of industry, after the claims of other classes were adjusted; yet this hope should not blind us to such a degree as to render us unable impartially to investigate the possibility of the existence of many powerful tendencies which prevent so favorable a result, and cause the elevation of the laborer to be the work of centuries, instead of being, as we are likely to fancy, the outcome of a few decades of improved production.

It is perhaps necessary to present clearly the difference between the views of the law of wages, presented in this essay, and that of the so-called iron law of wages. This latter law asserts that wages can never be permanently higher than the amount it costs the laborer to live and propagate. The laborer is regarded as incapable of any real development towards a higher civilization, and as having such strong passions as to bring on a chain of events which will ultimately deprive him of any share in improved

production. Is there, however, no consistent middle course between the claim that the results of improved production pass easily and quickly into the hands of the laborer, and the other extreme, which asserts that all such results pass just as easily and surely out of his possession? It seems to me that there is such a way, and that many important facts make it evident, on one hand, that wages are determined by law, and on the other, that the law of wages has no direct connection with the causes improving production. A few individuals far in advance of their time have perfected all those processes which have so much increased the total income from industry. Were the mere possession of a large income a surety that it would be retained, we might predicate from the increase of the average return for labor that a fair share would come to each laborer. There are, however, many qualities of mind and body which must be strengthened before the actions of each man will so conform to the natural conditions around him that a better distribution of wealth is possible. These qualities develop but slowly, and have many powerful social tendencies which tend to counteract their growth. To so great a degree is the growth of these qualities retarded that often many generations must pass before their development becomes sufficiently marked to receive universal recognition. So long as the growth of economic qualities in man is so slow that many economists can discover little real progress towards a better man, it is hardly in place to claim that the condition of the masses will improve as rapidly as improved production will allow. Machines are much more easily and quickly improved than are men, and are subject to different laws. The causes

of improved production must, therefore, be independent of those fixing the standard of life and lead to an accumulation of wealth which will be much more rapid than is the progress in its distribution.

SECTION V.

SURPLUS REVENUE.

A proper application of the principles that have been discussed to the phenomena of distribution will secure a new point of view from which some of the intricate problems relating to value and the stability of prices may be freed from their complexity, and so presented as to reveal the simple working of fundamental laws. It has been shown that the share of the whole produce which each factor in production acquires, depends upon its relative rate of increase, and that the conditions determining the rate of each factor are distinct and independent of those of the others and do not stand in any fixed relation to improved production. From its peculiar conditions, production goes on developing at a rapid rate and has already augmented the aggregate wealth of mankind, and the produce suited for distribution to many times the amount which our forefathers had for production or distribution. Yet the standard of life which determines the rate of wages, has developed much more slowly than it could have done, had it been determined directly by the progress in industrial processes, and risen as rapidly as the produce obtained from production has increased. During the same time, the rate of interest which shows the share which the capitalist obtains from the aggregate

produce of labor, has not increased at all: on the contrary, no one event is more patent, than that this share has been constantly declining, leaving us a rate of interest so low, that our ancestors would have deemed it incredible that any one could be induced by such a rate to use productively the savings transmitted from the past, to say nothing of the immense additions which are annually accumulated at this low rate. While these facts remain true, the shares of labor and productive capital, must absorb a smaller relative part of the aggregate produce of industry, than they did in former times when labor was less productive. Into some other hands must a large fraction of the wealth, resulting from improved production have fallen, and we should endeavor to trace it and discover who has become its lucky possessor.

Could the ultra-Ricardian view of rent be accepted, the ready answer might be given, that it has gone into the purses of the land owning classes to swell that ever increasing fund, which comes to them without work or forethought. This result would doubtless follow if the former conditions of agriculture were still in force and a large body of land lay at the margin of cultivation, to hold the price of agricultural produce high and firm. But when these lands are once so much improved as to demand for their continued cultivation, only a fraction of that price for food which was needed for their first cultivation, it is no longer safe to predict that the price of food will remain so high, that rent will absorb all the produce left, after the shares of labor and productive capital have been deducted. A hundred good farms by themselves, have no lever by which an increasing

share of produce can be drawn into the possession of their owners. They have not even any means to protect the return for the capital sunk in their improvement. Only the presence of poorer lands, gives any natural protection to the owners of better lands, whereby their rents will be secure. Give them neighbors toiling among the rocks and swamps, and they may rest at ease and see their unearned share increase by rapid strides. Change these poor lands into good ones, or put them to some other use for which they are better fitted, and these unearned rents and the idle landlords who enjoy them, would vanish much more rapidly than they came, if, at least, they depended upon nature alone for protection. And what protection, other than the natural ones, can the possessors of high rents find, after their poorer neighbors have conquered the obstacles to cultivation which made their fields have a high cost of production? The natural stability of a high price for food, would be destroyed by this change, and social conditions might reduce the share of rent to a minimum, just as easily as they could the shares of labor or capital. Indeed, land would now be on the same footing with the other factors of production: its possessors would be sure of only a minimum, arising from those slight differences of soil which skill and capital cannot remove. More than this amount farmers might get at times, but it would come from tireless energy and not from listless indifference.

After the natural protection insuring high rents is withdrawn, or even in an earlier stage of progress where it is withdrawing and prices are becoming less stable, the distribution of the aggregate produce of

industry must be different from what it was in the earlier stage of progress when the price of agricultural produce was high and secure. Then wages and interest were at a minimum, and rent absorbed the remainder. Now rent as well as the other factors, has a minimum to which it must tend to conform. The sum of the secure income of all three classes will no longer equal the aggregate production of wealth, but there will be a surplus revenue whose possession will be uncertain. I do not say that the total revenue of the three classes will not absorb all the produce of industry. This might be a fact, and yet the sum of the secure income of the three classes might be much less than the total production. The secure income of each class is determined by those slowly working causes which fix its rate of income and form a minimum below which its share cannot be reduced for any length of time, so long as the conditions of production and consumption remain unchanged. The surplus revenue is formed by a more rapid progress in production than in the development of those conditions by which the standard of life is raised. The margin between the total produce of industry and the amount of income secure to all the factors in distribution, increases with every stride in improved production, and forms an important factor in distribution as soon as the stability of agricultural prices is seriously undermined by the reduction of the quantity of poor land at the margin of cultivation. When this period has arrived the aggregate produce of industry is divided into two portions, each of which is distributed by the operation of its own peculiar laws. The secure income of each class depends upon those slowly operating causes which fix the rate of

increase of each class, and which effect changes in the social environment steadily and constantly, yet often so imperceptably, that many economists mistake the effects of our surroundings for a part of human nature itself, and imagine that the leading characteristics of man in the present social conditions, will remain as permanent as the laws of nature which limit his actions. The conditions which determine the distribution of the surplus revenue lie in the temporary circumstances which control the industry of each month or year. Each factor struggles for the mastery, and first one factor and then another finds itself in a position where it can secure the larger share of this undetermined portion of whole revenue. Any slight change in the state of production or commerce may so alter the conditions as to make a material modification in the manner in which this fund is distributed.

Just as in prices we recognize two distinct sets of causes affecting values—the one set shifting and temporary determining market values, the other constant, slowly working, yet all-powerful fixing normal values—so in distribution we must admit the presence of a double set of causes, each of which furnished the conditions through which a certain portion of the aggregate revenue of industry is distributed. In fact there is the closest vital relation between these two double sets of causes. The causes which determine normal values correspond closely to those which fix the share of secure income which each class possesses, while the causes which determine market values also have a vital connection with those which distribute the surplus revenue.

The increase of this surplus revenue, enforced by the conditions of production on a large scale, furnishes

the main causes which make present prices so unstable. Were the income from all industry just sufficient to furnish the minimum needed to keep in activity the necessary factors of production, prices of commodities would be held stable by the direct action of those laws which determine normal prices. On the other hand, had we an industry producing on a small scale, there would be as many different sorts of production as there were producers. With every fall in price some of the more inefficient producers would be compelled to cease production, and through the decrease in the supply of commodities the fall in price would soon be checked, and thus its stability would be secured. Production on a large scale places all producers on so equal a footing that no one closes his works until all of them are producing at a loss. The change to a production on a large scale produces similar results on the stability of the price of commodities that the transformation of poor land into good land has on the stability of the price of agricultural produce. High profits and steady prices for efficient producers are obtained only through the presence of less efficient neighbors, and whatever causes displace entirely these persons working at a disadvantage, take away that natural protection to stable prices which our ancestors enjoyed and leave a large portion of the annual produce of industry without any firm, steady conditions to determine into whose possession it shall flow. Like a river passing through the delta at its mouth, any slight obstacle may change the course of its distribution and leave its happy possessors of to-day in a muddy basin of despair to-morrow. Again, just as the value of a river to navigation depends not upon the total

flow of water along its course, but on the regularity of its flow and the stability of its bed, so the prosperity of a country is determined not by the aggregate produce of industry, but by regular production, stable prices and uniform distribution. Industry which does not conform to these conditions is not a blessing and may easily be one of the worst curses with which a nation could be afflicted.

SECTION VI.

SOCIAL CONDITIONS MAKING PRICES STABLE.

It would not be correct to conclude that because the natural conditions keeping prices stable are disappearing that the surplus revenue remains without any conditions determining its distribution. As soon as the natural causes operating in the environment of man cease to act beneficially and no longer supply the proper conditions for his development, there begin to arise in his social relations new causes which take the place of the natural ones and furnish a new basis for further progress. Nations gradually and unconsciously begin to make social changes to conform to new conditions just as soon as nature withdraws her protection by throwing them into new environments devoid of external security. Just as the development of our present means of shelter and clothing arose from the migration of man from semi-tropical regions where nature supplied the conditions for warmth, to more northern regions devoid of these conditions, so with any new transformation we must expect to see springing up some new social arrangement by which the evils resulting from the

decrease of natural protection can be averted. We are now just beginning to adjust ourselves to that lack of natural protection which has in the past made prices stable, and along some lines enough progress has been made to reveal what industrial modifications are likely to supply us the means for stable prices and further progress.

During the period of small production cheapness or the power of underselling was the determining factor in deciding which of the many producers should survive. The public sought exclusively those places where the cheapest articles were to be had and no other factor was of any moment in deciding where a purchase should be made. Buyers always sought the sellers and thus no expense of selling kept any consumer from obtaining any article at its lowest cost of production. Such conditions must always prevail where the produce of industry is barely sufficient to furnish the necessary minimum to the various factors of production. Cheapness must then become prominent and other considerations lose there importance and significance. With the rapid increase of productive power subsidiary influences gain in importance and the power of underselling to a large degree ceases to determine directly the actions of buyers. Now sellers begin to seek the buyers in various ways and find it more advantageous to attract the attention and excite their feeling or prejudices at a considerable cost than to win their trade through a mere appeal to cheapness. Formerly the whole attention of the producer was devoted to efficient production. If the production was efficient the sale of commodities came of itself, and the arts of the salesman were of no avail against the differ-

ence of a penny on the price. Now the importance of the salesman is supreme. More attention is probably now paid to the art of selling than to efficient production. This is shown by the larger salaries which efficient salesmen get in comparison with those that factory superintendents obtain. In most large establishments for each man employed in directing production a half a dozen will be found occupied exclusively with the purchase and sale of products, and the latter class will also have the larger salaries.

The extensive use of advertising illustrates the same tendencies. There are doubtless kinds of advertising which increase the cheapness of commodities yet this result cannot be claimed for the mass of those artifices by which the attention of the buyer is distracted from the real merits of the article, and which make some side-issue of more weight than cheapness or real worth. In every little village hundreds of dollars are expended annually to tell the people that tea and sugar are to be found at the grocery store, nails at the hardware store and beef at the meat market. Even so common an article as dairy salt can no longer be sold without extensive advertising, and the tons of printed matter which extol the merits of different kinds of soap and baking powder tell only too plainly how small a factor real cheapness is in the estimation of the average citizen. In some cases, agricultural implements for example, the selling price is often double the cost price and frequently manufacturers withdraw agencies from dealers because they have sought to attract trade by underselling the schedule prices. In many trades there is a tacit understanding that buyers must not

be attracted through reduced prices, yet each firm may advertise to any extent, send out agents or resort to any other costly means to increase their sales. Think again of the immense addition to the first cost of most commodities which the prevalent use of commercial travelers occasions. The hotels of even the smallest villages are overflowing with these solicitors for trade, and who can be so deceived as to think that this form of selling increases the cheapness of commodities?

Wherever the simple ways of our fathers are departed from and the seller seeks the consumer, an entering wedge is secured through which higher prices become substituted for the lower. With the attention once diverted from cheapness and equality there seems no limit to the divergence of the selling price from cost. The art of selling does indeed require great skill and is a worthy study, but it is a study of human weakness and not of human strength. Nothing could reveal more plainly the weak side of mankind than the great success of the many artifices to which sellers resort to find a market for their wares. Of course they talk ceaselessly of cheapness and quality yet, whoever listens must pay dearly for it.

When buyers are influenced in their purchases by feeling and prejudice and a thousand other circumstances to which sellers must appeal there must be a great addition made to the cost of commodities. A higher range of prices is thus substituted for a lower, and a degree of stability is acquired through the absorption of the surplus revenue. Yet it is a stability founded upon waste leaving the mass of the people in a condition not much better than if produc-

tion had not been improved. It is, however, the first stage, the social development towards stable prices after the natural conditions for this end have been displaced, and by clearing the way for a better adjustment it forms an important epoch in social progress.

Stable prices, it is well to keep in mind, mean high prices as soon as the natural conditions determining prices are displaced. The fierce competition which reduces prices meets no obstacles counteracting its tendencies until all the producers produce at a loss. The great similarity of the conditions under which each producer on a large scale operates gives no one of them sufficient advantage over his competitors to enable him to compel them to discontinue production without placing himself under conditions that will destroy his own profits, or, if he and they are both well supplied with capital, prices may fall far below the cost of production and remain there until those interested have wasted their capital in useless endeavors to get some advantage over their rivals. With no natural limits setting bounds to competition some social restraints must be found, and the endeavor to do this has led to the formation of trusts and other similar combinations which fix limits to the downward tendency of prices. As such combinations to insure success must be bound together by the strongest of ties, it is merely the natural outcome of success that when the conditions are secured by which prices can be restored to a reasonable height the same influences would induce a successful combination to force prices still higher, even to that highest point where an additional price would cause a rapid decrease in the consumption of the products.

of the combination. This highest point would be reached when all the surplus revenue was absorbed. Any further advance would set in motion a series of events which in time would react against the combination and reduce its profits. The real standard of life of a people is fixed by conditions too permanent and powerful to be modified or reduced by any combination or set of combinations that producers can devise. They may by shrewd concerted action secure for themselves the greater part of the advantage arising from improved production, but the working of natural laws fixing the permanent shares of the different factors of production is not so easily set aside as to enable even the best matured schemes to be successful in making a radical change in the distribution of wealth. Slowly, yet surely, the social environment of man is creating a higher standard of life, but in the mean time the more rapid progress of production increases that surplus revenue which is sure to fall into the hands of those who can present the strongest combinations.

The social conditions favoring the growth of combinations are now so active, and so likely to cause them to increase both in number and in firmness of organization, that it is worth our while to investigate with care what will be their effect on the distribution of wealth, and also whether or not they are to be regarded as a necessary stage in our progress towards stable prices and further social development.

In regard to the changes in the distribution of wealth, it is probable that the land-owning classes will be those most affected. Without any organized opposition on the part of producers, the mere operation of natural laws would give the greater part of

the results of improved production to land-owners through the rise in the price of food which the active competition among individuals produces. Free competition creates a low price for commodities and a high price for food. Restricted competition reverses this and causes a high price for commodities and a low price for food. We have then two different social states to compare from whose characteristics we must decide whether the probable change from one to the other will be productive of any good.

To make a valid comparison, however, it is necessary to overlook the temporary effects which such a change brings about. The necessary transformation introducing any new system creates hardships which demand consideration and even compensation, but these evils should not prevent an innovation which is a step towards a higher social state. The evils arising from combinations to raise prices are most visible when first formed. On the one hand the means used often violate the rights of innocent parties, taking large masses of wealth from its rightful owners and giving it to the successful organizers of the combination. On the other hand the recipients of the benefits of the combination are likely to be few in number, and hence with each new successful trust we have a large concentration of wealth in a few hands. These facts show some of the evils of the change to a new system; yet bad as they are they should not prevent us from seeing the ultimate effects which show themselves after industry has adjusted itself to the modified conditions, and the shares in these combinations have become distributed through the community like other wealth.

Suppose that the capital invested in a given factory yielded a net revenue of \$50,000 while competi-

tion was free, and that through a trust the net revenue was increased to \$100,000. Should the conditions favoring the combination prove permanent, the market value of the stock would double in value, and the ultimate outcome would be the same as if double the capital were required. If a similar combination were formed in every industry with like success, the result would be the same as if twice the amount of capital was now needed that formerly was. Now whatever tends to increase the capital of a nation tends to develop those qualities in man upon which the accumulation of capital depends. There would be a larger proportion of the population than formerly of those who saved, and in them the necessary qualities would be more developed. This would be a great gain, and would doubtless tend to produce a better social state than the one it preceded. All monopolies change the distribution of wealth so as to increase the benefits of saving. Incomes from this source as well as from the rent of land cannot justly be regarded as a permanent loss to society.

The rise in the price of commodities and the accompanying fall in the price of food would reduce the value of farms, or at least prevent a rapid rise in their value. It is therefore a pertinent question whether it would be more beneficial to the community that the surplus revenue, above the necessary minimum which the natural laws give to each class, should go to landlords or to stockholders in industrial combinations. In one of these two ways it is likely to be distributed for a long time yet, however great may be the popular desire that progress should take us along other lines of development. It is probable that we have had about all the development

that can be hoped for from a high price for land. Improved farming depends upon intelligent farmers and stable prices much more than on uncertain though high prices for agricultural produce; and intelligent farmers are more likely to be found where land brings a moderate price than where the price of land is so high as to compel a separation of landlord and tenant into two distinct classes.

On the other hand there are several distinct gains to be obtained from a tendency towards combination. Stable prices are a necessary condition of social progress, and no other means seem now available by which they can be recovered. The opposition to trusts owes its origin much more to dislike of high prices for commodities than to a love of free competition which the trust destroys. People forget that real progress is conditional upon a change in the relative values of certain classes of articles by which the price of commodities will rise in value at the expense of agricultural produce. A manufactured article contains much more labor in proportion to its value than does a bushel of wheat or a pound of meat. Any real progress will adjust the value of these articles more closely to their cost in labor and thus carry us along the same road which the formation of trusts takes us. We must ultimately accept this change in values and bring our feelings into harmony with it, even though we prevent that progress towards stable prices which can be secured through trusts and combinations.

Any solution of the labor problem involves the difficulties which a combination of capitalists must overcome to be successful. A higher range of prices for commodities needed to secure a reasonable re-

ward to laborers necessitates that some limitation to competition be enforced, even in a social state where wages reach the highest limits which production will allow; and if private interest will solve any of these problems the experience thus gained will be invaluable when the time arrives for society to be reorganized on another basis.

Stable prices and regular employment furnish better conditions for the development of the higher qualities in man than does a rapid improvement in production coupled with the present dominant evils. Stocks and bonds of stable industries would give a much greater inducement for laborers to save than most of the investments which are now offered, and the increased interest in his work which such investments would give would add largely to the efficiency of labor. Every laborer should have an opportunity for a safe investment in the industry where he is employed, but this opportunity cannot be offered so long as unstable prices make such investments uncertain.

The diversion of the surplus revenue from the landlord classes to corporations would also be advantageous from the fact that the latter are much more subject to the popular and moral tone of the nation than are the former class. Should the price of land in this country rise to five hundred dollars per acre, it would be looked upon by the public as the natural outcome of our progress, and the greater part of the people would doubtless regard the rise in value as a sign of prosperity, and hence no effort would be made to secure a better distribution of wealth. Should, however, one-fourth of this sum come into the possession of a series of trusts as a

result of a successful combination, the whole people would be aroused, and the agitation would not cease until some better solution was discovered. The very fact that the popular dislike of trusts is so much greater than that of landlords makes it much more probable that the success of trusts will lead to real social progress than will the continuance of present tendencies towards the increase of the value of land. So long as farmers continue to regard their prosperity as coming from high prices, and not from stable prices, they form an almost insuperable barrier to a better distribution. Should a series of trusts prove stronger than they and wrest from them a large share of the surplus revenue they now enjoy, they would be soon educated to see that their prosperity is dependent upon the same conditions as the other industrial factors; and they would be willing to co-operate with other classes for the furtherance of those measures which will give both stability of prices and a higher standard of life.

If this point of view should prove to be valid, it may be that the present powerful tendencies to form trusts, will form a second stage in our development toward stable prices.

In the first stage, we saw that the surplus revenue is largely wasted by the tireless endeavors of the sellers to attract the attention of buyers, and to receive their trade at any cost.

The second stage will be one of economy. The activity of the salesman will be reduced to its proper limits, and more of the best talent will be directed towards improving production. In this increased economy the public may have only an indirect interest.

other than the benefits derived from more stable prices; yet through such a development, the foundation would soon become apparent on which a better industrial system could be laid. If the laborers become convinced that there is no direct connection between improved processes and increased wages, and the farmers become conscious that they are not always the sole recipients of the surplus revenue, which better industrial methods originate, both classes will be more willing to coöperate and to enforce those measures, which alone can raise the standard of life so high that there will be no surplus revenue for any class or combination to absorb.

Antecedent to any considerable progress along the most available lines, there must be a general recognition of the narrow limits within which political action can be of any avail. In spite of the assertions of Mill and our orthodox friends to the contrary, the distribution of wealth is to no greater degree a matter of human institution, than is its production. It is no more true, that a people can directly change the distribution of wealth without decreasing the amount to be distributed, than that they can change the ownership of the capital without effecting production. Laws to divert the incomes of one class into the possession of another are usually much more efficient in retarding progress along its only possible direction, than they are in securing the ends for which they were designed. The only efficient action which a people can take, consists of public measures promoting a higher standard of life; at least it may be said, that efforts along this line are less complicated and more likely to secure the desired end, than are direct endeavors to change the distribution of wealth.

With the appreciation of this fact will begin the third stage in our progress toward stable prices. The desire for a higher standard of life will be consciously coupled with the presence of a large surplus revenue, and the latter will be used as the means to secure the former. Taxes can be made just as efficient in securing stable prices as can any monopoly, whether of land or capital. If the gains caused by the rapid progress in production were more largely absorbed by taxation the operation of natural laws would regulate the distribution of the remaining produce of industry and thus keep prices stable. Taxes should therefore stand in a direct relation to the surplus revenue which makes prices unstable, and not be limited to the lowest minimum that the *laissez-faire* conception of government would allow. A high rate of taxation, when used economically to further public ends, raises the standard of life by furnishing the conditions needed for a wholesome regular social progress. A well organized system of public instruction, public parks, cheap, yet elevating, places of amusement, good public roads in the country, and an efficient system of drainage and sanitation in the cities, are worthy of mention as objects for which surplus revenue could be expended to a greater public advantage than that which is, at present, secured by leaving it to be absorbed by the strongest combinations which shrewd men can devise. We have passed beyond those primitive conditions in which an increase of taxation necessitates a decrease of that portion of the produce of industry which the average individual enjoys, if the sources of national revenue are taxed, and not the income of individuals.

The best of taxes are those which take a portion of the undistributed revenue of the nation. It then reduces the advantage to individuals of improved industrial processes, and falls upon those persons or combinations who would have obtained the increased produce, if the public had not, by taxation, forestalled them. Should the increased taxes of a given period be laid upon the undistributed revenues of the whole nation, and be no greater in amount than the gains from improved production during the same period, the share of no individual would be reduced. The remaining revenues of the nation would be distributed by the same laws, and in the same way as if no improvements had been made, and each individual would receive the same amount that he previously enjoyed.

It would be an especial matter of regret if old taxes to which the natural industries have become adjusted should be reduced from the mistaken notion that such a reduction would increase that portion of wealth which finds its way into the possession of the common people. A reduction of this nature would act in the same manner that improved production does. The same classes which absorb the gains of improved production would also acquire the benefit of reduced taxation and leave the mass of the people in exactly the same condition that they formerly were. It needs a great faith in natural laws to hope that under present conditions any considerable share of these reduced taxes would ever get a chance to fructify in the pockets of the people in the way our grandfathers supposed they would. A far wiser plan would be to retain the taxes and use them to promote public ends, at

least so long as the workings of economic laws do not tend to a harmonious development of the whole man. Unless the united efforts of the nation are directed towards strengthening those qualities in man which lie dormant under the reign of individual selfishness, we cannot expect that development in man which will relieve us of our present evils. Public revenues are much below what is needed for these ends, and a further reduction would be fatal to the realization of higher ideals, without even the compensation of an individual prosperity.

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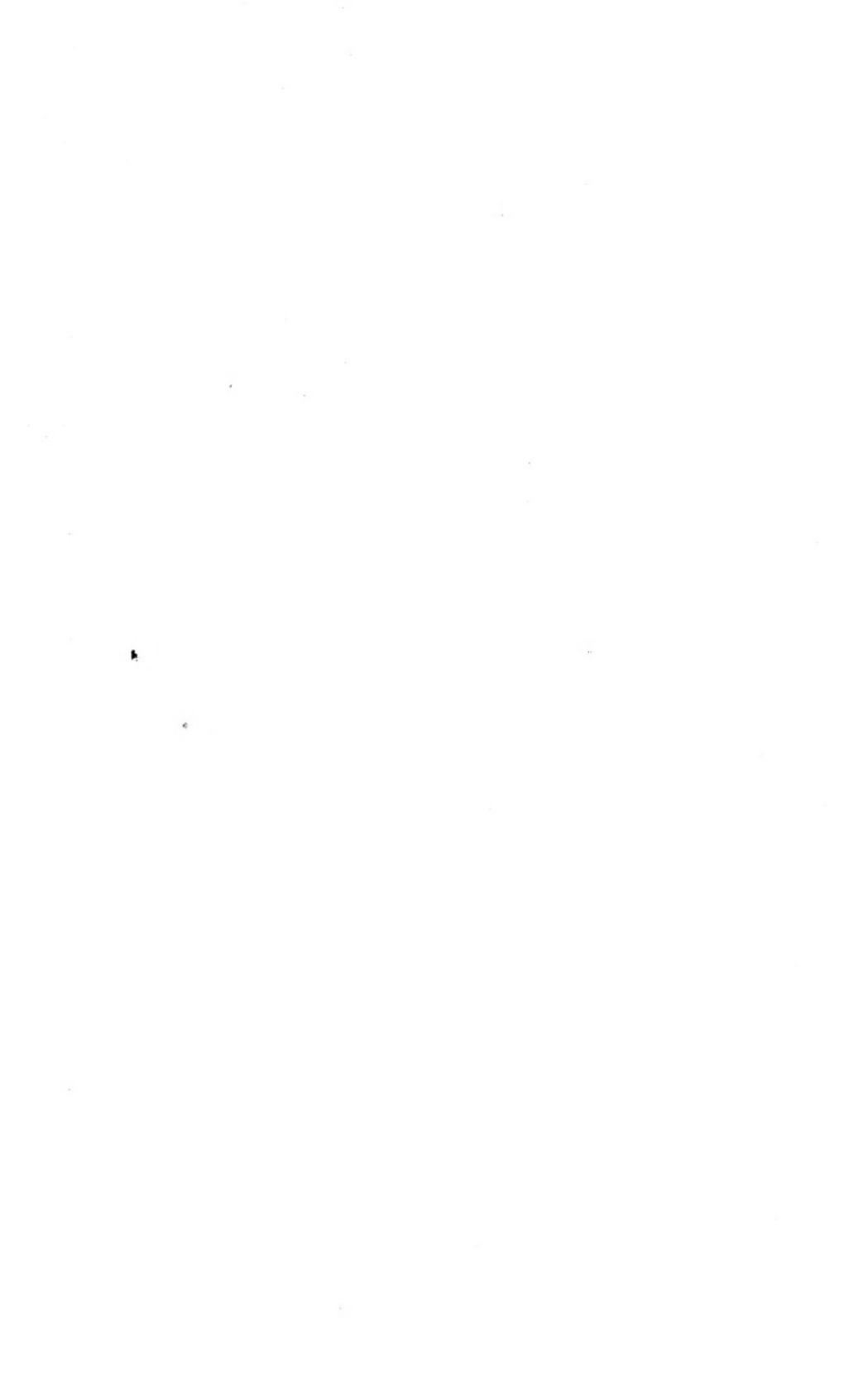
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